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ABSTRACT

This manual, developed to assist Missouri school personnel in the provision of educational opportunities for students with traumatic brain injury (TBI), answers commonly asked questions about the educational needs of these students, and gives practical applications of educational practices and programming. Three case studies are introduced to help explain the educational applications. The three children (ages 2-15) profiled are representative of the diversity of students who experience a brain injury. Their stories describe how they, along with their families, teamed with staff from their rehabilitation centers and schools to facilitate their return to school. These stories not only personalize students with TBI, but also the educational practices and programming often necessary to support reintegration and educational success. The manual focuses on several key areas in the context of the three case studies: (1) developing a school re-entry plan; (2) implementing learning, memory, and behavioral strategies; (3) developing an Individualized Education Program; (4) conducting a functional behavioral assessment; and (5) developing a behavioral intervention plan. Appendices include lists of Missouri resource agencies, resource materials, community prevention programs, and Internet resources. (Each case study contains references.) (CR)

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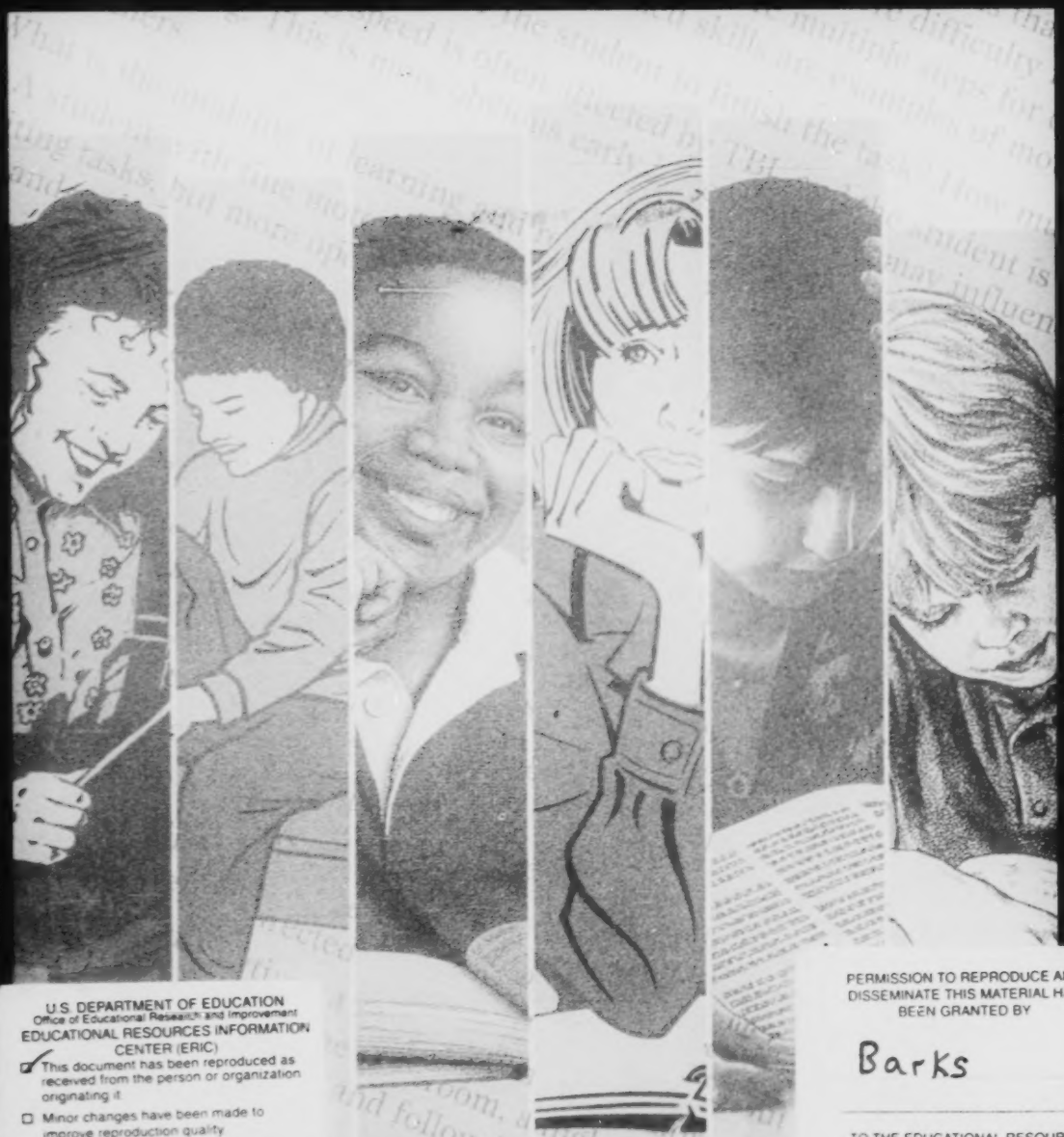

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A practical resource for school personnel

Developed to assist school personnel in the provision of educational opportunities for students with traumatic brain injury, this manual answers commonly asked questions about the educational needs of these students along with practical applications of educational practices and programming. Extensive resources are appended.

Educational Directions for Students with Traumatic Brain Injury focuses on several key areas in the context of three case studies.

- Developing a school re-entry plan
- Implementing learning, memory, and behavioral strategies
- Developing an individualized education program
- Conducting a functional behavioral assessement
- Developing a behavioral intervention plan

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Introduction

Learning is the brain's primary function, its constant concern, and we become restless and frustrated if there is no learning to be done. We are all capable of huge and unsuspected learning accomplishments without effort (Smith, 1986, p.18).

Chad was a wrestler in his sophomore year of high school when he was involved in a car accident and sustained a traumatic injury to his brain. What follows is his account of returning to school:

Going back to school was very different, exciting & scary not knowing how the teachers & students would react even worried about how I would react. I needed some minimal adaptions such as finding my way around carrying heavy books. Yet when these & others problems came to the surface. The teachers & myself found simple solutions like friends that were going to the same class & keeping my books in the class & a spare one at home for homework. these little problems seared & seemed big to me yet Mrs. Peterson one of my teachers I had a very close relationship with helpme understand that was helpful. One thing all students have in common is time, we have plenty of it and we will get better. My first couple of months back I only went ½ a day I became very exausted very easily. I always kept a calander & ass assignment books. I went back in school in the 10th grade & everyyear I passed I'd look back & say it was worth it I try to do better next. On my Senior year I Finished and looked back and catch myself saying the same thing.

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As many as one million children and youth sustain a traumatic brain injury (TBI) each year in the United States. Chad's story is represen-tative of the majority of TBI survivors. Chad was an adolescent at the time of his accident, the age group most frequently affected by head injury. He sustained his injury in a car accident, the most common cause of TBI. Twice as many males as females suffer an injury to the brain. Accidents, such as the one Chad survived, once claimed the lives of children who today are not only surviving but recovering and returning to school (Mira, Tyler, & Siantz, 1991). These children pose a unique challenge for educators.

This manual was developed to assist school personnel as they prepare to provide educational opportunities for students with TBI.

When a student who has sustained a brain injury seeks to reenter a school, educators and administrators have many questions. These questions are like pieces of a puzzle which, once connected with answers, provide a picture of the educational needs for a student with TBI.

The first part of this manual attempts to answer those questions, therefore completing the picture for school personnel.

The next section will look at practical educational applications as the reader is introduced to Charles, Elizabeth, and Chris. These students are representative of the diversity of students who experience a brain injury. Their stories describe how they, along with their families, teamed with staff from their rehabilitation centers and schools to facilitate their return to school. These stories not only personalize students with TBI, but also the educational practices and programming often necessary to support reintegration and educational success.

In summary, the brain is a complex organ. The education of students following an injury to the brain presents unique challenges. The dynamic nature of TBI calls for fluid and flexible problem solving. Schools, educators, and administrators, with knowledge and skills, can help students with traumatic brain injury succeed.

Pieces to the Traumatic Brain Injury (TBI) Puzzle

Is the number of children with traumatic brain injury (TBI) increasing in our schools?

Almost one million children and adolescents sustain a traumatic brain injury (TBI) each year. In the past, few of these students survived, making TBI a low incidence disability for schools. However, due to advancements in emergency medicine and acute and rehabilitative care, schools are more frequently required to facilitate the education of students with TBI. Current research estimates that 95% of all children and adolescents with TBI will survive and that even 65% of the most seriously injured can be expected to live (Michaud, Rivara, & Grady, 1992).

What should school personnel know and expect upon a student's re-entry?

Each student is unique. Because the extent of the student's learning difficulties can vary widely from case to case, educational programming must be specially designed for each student. The challenge for schools comes in identifying initial changes in learning abilities, behavior, and physical functioning and then tracking recovery over time. Such information is needed for educational planning (Utah State Office of Education, 1994).

Medical problems which may persist upon re-entry into the school include: irritability, fatigue, headache, breathing problems, hormonal changes, and bowel or bladder incontinence. Seizures can begin within six weeks of the accident or up to two years later. Some students may have physical and sensory motor problems and need specialized wheelchairs or adapted seating in order to accommodate their needs.

According to Farmer et al. (1996) some medically relevant questions schools will need to ask of the hospital or rehabilitation facility include:

- How severe was the injury?
- What is the prognosis for continued recovery?
- What are the major health-related needs of the child?
- Will the child need medical treatment at school?
- Are seizures or other neurological problems likely?
- What changes in behavior necessitate a call to the physician?
- What are the activity restrictions to ensure safety and well-being?
- What medications does the student need?
- What are the side effects of these medications?
- Will the student need to take them during the course of the school day?

There must be open lines of communication between the school, the hospital, the rehabilitation facility, and the family of a student with a TBI. Some additional questions school personnel might ask of the occupational therapist and physical therapist on the student's rehabilitation or re-entry team include (Farmer et al., 1996):

- Can the student tolerate a full or half day of school?
- Will the student be able to participate in physical education?
- Should any adaptations be made to promote safety?
- Will there need to be any toileting assistance?
- Will the student be able to manage the lunch tray/line?
- Is special transportation necessary?
- Does the student need special or preferential seating?
- Can the student's desk be adapted to increase the student's functioning?
- Does the student have the fine motor skills necessary for writing and using school supplies?
- Is any assistive technology needed?

- ❖ Will the student be able to attend to his entire visual field?
- ❖ Will the student be able to copy information from the chalkboard/overhead?
- ❖ Would instructional accommodations help the student be more successful?

Although issues related to health and sensorimotor functioning are important to address at the time of hospital discharge, the most persistent and concerning problems following TBI are changes in communication skills, cognition (e.g., attention, memory, speed of processing, problem-solving), and personality. Such changes can greatly affect new learning and work production in the classroom. Hospital-based staff should also have observations in these domains to aid in initial educational planning.

How are children with TBI different from other children with learning problems?

There are clear and distinct differences between students who experience a disability from birth and students who experience a TBI. A major difference is the age of onset. A brain injury happens suddenly and can occur at any time. The student with TBI and his/her family must then adjust rapidly to radical changes. By contrast, the student with developmental learning problems and his/her family have "grown up" with differences, gradually adjusting to the changes imposed by these learning difficulties at each life stage (Savage & Wolcott, 1994).

A second difference for the student with TBI is that drastic changes often occur with the student's skills and personality. Students who have learning problems usually follow predictable learning patterns which require consistent teaching strategies. Students with TBI often retain some skills and lose other skills. Previously learned skills which are retained after the TBI serve as the foundation for rebuilding for the student with TBI. However, the sense of "Who I used to be" reminds the student of his loss. In contrast, students with ongoing learning problems do not have memories of higher levels of cognition or of a better adjusted personality.

Students with TBI can experience a rapid rate of progress and change initially, unlike children who are traditionally included in special education. Students with TBI often make rapid progress within the first year after injury. In addition, these students can "plateau" for a time and then suddenly make further significant progress. However, recent data also show late onset effects in children with TBI. That is, children can seem to be doing well shortly after injury and then show a gradual decline in abilities relative to their peers. This is because TBI often interferes with new learning abilities and disrupts developmental progress. Children who are injured under the age of seven years are especially at-risk for "late effects."

Do children who re-enter school after a TBI present special safety concerns?

School personnel are often concerned about the safety of a student with TBI. Students who have suffered an injury to the brain are more likely to incur another head injury. Sometimes behavioral difficulties such as inadequate impulse control, impaired judgement, and motor or balance difficulties predispose a student to another injury. In addition, these students are more likely to develop seizures than their non-injured peers. Re-injury can compound the effects of the original trauma.

Students who have motor or balance problems may require an attendant or protective helmet. Increased supervision of these students on the playground or when moving between classes and activities is advised. Participation in physical and driver education can be determined after consulting the student's doctor.

Do the designations mild, moderate, and severe TBI have any educational implications?

The designations of mild, moderate, and severe are used to describe the medical continuum of brain injury. These medical designations do not predict nor indicate educational outcomes for the individual child.

Severity Ratings for TBI

There is no consensus among researchers in this area regarding formal definitions of severity of injury. However, the most common definitions and sequelae are listed below:

Mild:	Moderate:	Severe:
GCS = 13–15* with no documented structural changes on CT or MRI brain scans.	GCS = 9–12, or GCS = 13–15 with documented structural changes on CT or MRI.	GCS = 8 or less.
Less than six hours duration of impaired consciousness.**	6–24 hours duration of impaired consciousness.	Over 24 hours duration of impaired consciousness.
One week or less of post-traumatic amnesia.	Two weeks or less of post-traumatic amnesia.	Three weeks or more of post-traumatic amnesia.
Can present with persistent headaches, dizziness, mild memory problems, and subtle personality changes; usually resolves completely within 6–12 months.	Can present with uneven cognitive abilities, including decreases in memory, attention, reasoning, and sensorimotor functioning; changes in personality and behavior may be more prominent; whether these problems persist is quite individually determined.	Often presents with major changes in cognitive and behavioral functioning that gradually improve over 12–18 months; however, these children are much more likely to have persistent motor, memory and learning, and behavioral problems.

*GCS = Glasgow Coma Scale Score

**Duration of impaired consciousness = time to first following simple commands

However, the likelihood of learning problems does increase with more severe injury. That is, group comparisons of children with varying degrees of injury clearly show that students with moderate to severe injury are more likely to have learning problems and to require special education services. It is important to understand the medical definitions of TBI because children with more severe injuries are more likely to need services and long-term monitoring.

Does the type of injury affect the problems which the student experiences as he or she recovers?

There are two types of TBI: closed and open.

A closed head injury may be caused by a fall, or a bicycle, motor vehicle, or sports accident. A closed head injury occurs when the brain is bounced against the inside of the skull, usually with no visible sign of damage to the outside of the head.

In a closed head injury, the damage to the brain results from bruising, bleeding, or stretching and shearing as the brain is bounced around inside the skull. The resulting impairments reflect this diffuse type of injury with the potential for a combination of physical, intellectual, emotional, social and/or vocational difficulties.

An open head injury is less prevalent than a closed head injury. An open head injury is a visible wound to the head and brain resulting from a gunshot wound, or a penetrating object such as a knife.

With an open head injury, the damage is generally localized, affecting a definite area of the brain. This can cause very specific problems such as loss of vision, hearing, paralysis, or specific cognitive problems such as loss of language.

How do schools modify instruction and adapt curriculum for a student with TBI?

Adapting the school environment to meet the needs of the student is as crucial as adapting the curricula or teaching styles. The location of the student's desk, the room arrangement, and the number of other students in the room are important factors for teachers to consider. In addition, the organization of the school day and classroom management style have measurable effects upon the student's learning (McKee & Witt, 1990).

Farmer et al., (1996) suggests that teachers who will be involved with the student when he or she re-enters school should ask the rehabilitation team the following questions:

- In what academic areas is the student most successful?
- What academic areas may overwhelm the student?
- What modifications or adaptations would be preferable for this student (reading partners, cooperative learning activities, peer tutoring, metacognitive strategy instruction, assistive technology)?

- ❖ Will any classes require a parallel curriculum?
- ❖ What environmental conditions are best for the student?
- ❖ Are any teaching models preferable?
- ❖ How long can the student work independently?
- ❖ What techniques are recommended to meet the child's cognitive needs (attention, memory, organization) within the context of the curriculum and daily activities within the classroom?
- ❖ What should be given priority (facilitating social relationships, emphasizing task initiation and completion, improving academic skills)?
- ❖ Should homework be curtailed or limited?
- ❖ Should classwork be reduced?

What is the procedure for the assessment of these students?
School psychologists or special educators may not be familiar with assessment procedures for students recovering from a TBI. The traditional assessment battery of intelligence, achievement, and motor skills may not be adequate to address the needs of a student with TBI. It is not unusual for students with TBI to perform well on school assessment instruments but have problems with learning and adjusting to the classroom curricula and routine. Conversely, students may demonstrate severe deficiencies on school assessments, yet may manage themselves very well in the classroom (Telzrow, 1991). Evaluation of a student with TBI may necessitate school personnel to review the student's performance before the accident and compare that with current information.

Neuropsychology is a specialty area of psychology which focuses on the relationship between brain function and behavior (Kazuk & Stewart, 1997). An evaluation of the student's neuropsychological functioning is vital when designing programming for the student with TBI.

Neuropsychologists, working with the student in the rehabilitation facility, might use a flexible battery of formal and informal instruments designed to clarify a child's cognitive strengths and weaknesses. The results of the neuropsychological assessment are integrated with recommendations from other rehabilitation team professionals (occupational and physical therapists, speech-language pathologists, nurses, teachers, and social workers) in order to provide schools with a complete picture of the student upon re-entry (Farmer et al., 1996).

This information can be combined with the student's pre-injury school performance and compared with his or her peers. The following questions can help schools determine the cognitive interventions which could help the student succeed (Farmer et al., 1996):

Memory
- ❖ How has this injury affected the student's ability to process new information?

- Do deficits in attention, comprehension, memory, response sufficiency, speed of processing, or reasoning affect the student's learning?
- Is there a difference in immediate recall versus delayed recall of new material?
- What can be done to help the student with recollection problems (cueing, repetition, offering incentives)?
- Does the type of material being recalled make a difference (facts vs. personal information, written vs. auditory, organized vs. unorganized)?

Attention

- Can the student focus and sustain attention?
- Can the student change the focus of attention without problems?
- Can the student pay attention to more than one thing at the same time?
- What adaptations and modifications can help the student attend to his or her capacity?

Processing

- Does the student have reasoning and problem-solving abilities sufficient for everyday tasks and activities?
- Can the student use abstract reasoning?
- How efficient is the learning of this student?
- Does the student have a slow speed of information processing or rate of response which will interfere with classroom performance?
- When faced with classroom demands, will this student have difficulty organizing, accessing, integrating, or generalizing his or her cognitive abilities?

Organization

- Can the student plan and organize an approach to tasks and assignments?
- Can he or she break tasks into smaller steps?
- Can the student start tasks?
- Can the student sequence events according to time?

What are some common problems that students with TBI experience upon re-entry?

Reduced stamina, fatigue, and headaches are characteristics of TBI. Students may yawn frequently and place their heads on their desks. Teachers should be cautious not to interpret this as boredom, noncompliance, or lack of interest. Likewise, teachers should be careful not to dismiss a student's complaints of headaches as attention-seeking or work-avoiding tactics.

Some students may experience seizures. Teachers should be aware that seizures may be of a petit mal or of a partial complex nature. A petit mal seizure resembles a staring spell, which should not be confused with inattention. A partial complex seizure can include perseveration of behavior or movement of

which the student may not be aware. This type of seizure should not be confused with deliberate misconduct or attention-seeking behavior (Farmer et al., 1996). It is very common for students with TBI to be placed on anti-convulsants. These medications can affect attention and learning.

Children recovering from TBI often have difficulties copying, organizing material, and producing significant amounts of work. Gross motor problems may resolve quickly, but deficiencies with the execution of fine motor skills are noticeable, especially when speed is required.

Although IQ may return to the same level as it was before the accident, cognitive problems may persist. Students with TBI may demonstrate deficiencies forming concepts and being flexible in their thinking process. They may face difficulties with the organization of information and sensory stimulation. Students may find it arduous to deal with multi step instructions, and in the sequencing of their verbal or written responses.

A few students upon re-entry will still lack speech, have difficulties expressing themselves verbally, and lack breath control. More common are difficulties with language comprehension and expression. Students who re-enter school after sustaining a TBI may have problems finding the right words and putting together sentences. Their understanding of instruction will decrease as the directions become more complex.

Are funds available to help schools educate a student with TBI?

Providing education related services for a student with TBI requires schools to use resources creatively. The costs for services cannot be anticipated as easily as they can for the traditional student in special education (Lash, 1994).

There are a variety of specialists already employed by schools who can work with students with TBI. Districts can also consider sharing personnel. In some cases, hospital or rehabilitation personnel may be available.

If the cost of educating a student with traumatic brain injury is in excess of five times the amount needed to educate a student in general education, and if the school has completed the special education process identifying the student as eligible for special education services, the district may apply for excess funds. Information regarding this funding is available from:

Special Education Grants and Application Processing
Division of Special Education
Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, MO 65102
Phone: (573) 751-4385
Fax: (573) 526-4404

Where can teachers and administrators turn for help?

Frequently, teachers and administrators have questions about meeting the needs of students with TBI who return to school. In addition to the family, there are additional resources to help with the highly individualized programming and support these students need:

- Usually the rehabilitation center from which the child was discharged will conduct follow-up programs.
- The hospital or the physician who cared for the child at the time of the injury also may be able to provide information.
- The student's primary care physician may be able to answer specific questions. He or she can make further referrals to specialists.

See Appendices A–D for a listing of resource agencies, resource materials, community prevention programs, and Internet resources.

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Foreword

The following stories illustrate cognitive, social, and behavioral changes that can accompany a traumatic brain injury. These stories include general recommendations regarding approaches for understanding these changes and strategies for management.

The goal is to help the child function in a classroom and in a variety of social situations. The reader is reminded that each child is unique, both before and after an injury. School personnel and parents are strongly encouraged to seek professional guidance in the development and implementation of any program.

. . . Charles was proud of his bike, purchased with his paper route money. Charles had met several challenges in his 12 years. He had been identified as a student with a learning disability. He had lost his father under tragic circumstances. But his biggest challenge came one evening when he was delivering papers...

Case Study I: *Charles' Story*

Dusk was gathering around twelve year old Charles, known as "C" to his friends, as he tossed the evening edition of the newspaper into Mr. and Mrs. Will's yard. They were the last family on his route. Charles was anxious to get home; he was hungry and he knew his mother would be worried. Wednesday night papers were stuffed with the grocery store advertisements; they were heavy and had slowed Charles as he pedaled his **bicycle**[1] along his route.

Now it was finally time to head home. In early March, it still got dark early, too early for daylight savings time, but late enough for the snow to have melted from the sidewalks and roadways. Charles felt great riding his bike after a winter of hauling papers on foot with a canvas sack slung over his shoulder.

Charles: *"I had been delivering papers for about a year. I started in the fifth grade. Right after I started, my dad got killed. He was a night security guard at a warehouse and some guys tried to rob the place and shot him. That was really tough; my mom cried for a long time. I have two little twin brothers who couldn't understand what was going on. I thought I would feel better after they caught the guys and sent them to prison, but I didn't."*

Charles had saved up his paper route money to purchase a bike. It was his most valued possession. Charles had spent a lot of time comparison shopping and finding the best deal; he had felt so smart when he bought the bike. Feeling smart was important to Charles. He hadn't had the opportunity to feel very smart in school. When he was in third grade, Charles had been identified as a student with a learning disability. Now as a sixth grader, although he spent most of the day with his classmates in general education classes, Charles still felt like he wasn't as smart as his classmates. Sometimes, to feel smart, he would tell his teacher that the work was too easy and refuse to do it. Many times this kind of **behavior**[2] would buy him a ticket to the principal's office.

But he was smart enough to do this newspaper route. His customers were pleased. He delivered his papers on time, and on most days he could aim well enough to hit their porches with the paper. He was smart enough to save up for this bike. He was smart enough to be a great bike rider.

1
Bicycles
A child is four times more likely to be seriously injured in a bicycle crash than to be kidnapped by a stranger. More children are killed and injured each year on bikes than on skateboards, roller skates, tricycles, and scooters combined (Savage & Wolcott, 1995). Most of these injuries occur among children ages ten to fourteen (Pollock, Fue & Goldstein, 1995). Riders of this age tend to take risks and deal with traffic without proper training or equipment.

Bike helmets reduce the risk of traumatic brain injury by 90%. However, it has been estimated that only 5% of child cyclists currently use bike helmets.

2
Behavioral Sequelae (Deaton & Waaland, 1994)
Children who have sustained a severe TBI often demonstrate problematic behavior, even if they have not demonstrated behavioral difficulties prior to their injury. However, certain children may be at a greater risk for developing behavior problems. Research indicates that boys who are from poor and/or dysfunctional homes are more likely to develop behavior problems following injury.

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3

Emergency Medical Care

(Mira, Tucker & Tyler, 1992)

When the child with a suspected TBI arrives in the emergency room, these procedures are initiated:

1. Establishing an adequate airway and ventilation. In some cases this is accomplished by a tracheostomy (surgically placing a breathing tube in the front of the neck), nasogastric tubes (a tube placed down the nose into the lungs), or endotracheal intubation with mechanical ventilation (using a machine to breathe for the patient). The level of oxygen in the blood is closely watched. Abnormalities such as increased cerebral arterial blood flow (too much blood flowing to the brain), or deficient blood oxygenation (too little oxygen in the blood) are corrected.

2. Vital signs (blood pressure, heart rate, respiration) are assessed and monitored.

3. Associated injuries such as skull fractures, unusual bleeding, or internal injuries are diagnosed.

4. The Glasgow Coma Scale or the Children's Coma Scale is used to assess level of consciousness. These scales provide a score which helps determine the relative degree of severity of the TBI by evaluating eye opening and verbal and motor responses.

5. Pupillary reflexes (the response of the eye to light), visual responses, motor movements, etc., are assessed in order to determine neurological (the condition of the brain) status.

6. History of trauma (causal agent, duration of unconsciousness), prior seizures, medication, etc., is taken.

7. Diagnostic tests are undertaken to assess the condition of the brain, skull, and spinal cord. Computed tomography (CT) scans are used to locate fractures, bleeding in the brain, brain swelling, foreign bodies, and changes in the structure of the brain. Angiography is used to assess blockages or disruption in the blood flow in the brain. Roentgenograms are conducted to detect depressed skull fractures and cervical spine injuries.

—Continued

Charles' mother: *"OK, so Charles wasn't a perfect kid before the accident. He had his problems here and there. He got along with some teachers better than others. But he wanted to learn. He knew school was important.*

"I told him how hard it has been for me; I didn't go on to college. He knows how hard I have to work to support him and his brothers, especially since their Dad was killed.

"I just wish he had listened to me better. The store gave him a helmet when he bought his bike, but he wouldn't wear it. I couldn't make him wear it; I tried. I wish I had tried harder."

The air still had a bite as it stung his cheeks and ears. Somewhere, someone had started up their fireplace and the smoke carried a memory of the recent winter. It was a Wednesday night, which meant a spelling test tomorrow. Spelling was hard for Charles. Somehow, the way he put letters together did not match the way the words were supposed to look.

Charles turned his attention to the long downhill stretch of road before him. In the summer, he and his friends had raced their bikes down this steep slope, braking just before the intersection at the bottom. Mindless of the wet surface, Charles let out a war whoop and started down the hill at full speed. Nearing the bottom, he applied his brakes, only to have his wheels slip out from under him as he slid into the intersection. He heard the blare of a horn, saw two headlights coming towards him, and then there was nothing.

In addition to a massive head trauma, Charles suffered multiple injuries, including rib fractures, a collapsed lung, a fracture of the left femur, and liver damage.

Charles was assessed with a severe injury to the brain with a Glasgow Coma Scale (GCS) of 4. A computerized tomography (CT) scan revealed widespread contusions on the surface of the brain. There was intracerebral bleeding in several places. Upon arrival at the **trauma center**[3], Charles was very close to death.

Charles' mother: *"After I got the call from the hospital, I got down there as fast as I could. I can't remember driving there or anything. All I knew is I was standing at the emergency room desk. I demanded to see my son. A nurse took me over to the trauma center.*

"I knew it was bad before I even saw him. The doctor had that look. It was the same look the doctor had when they had my husband in there. Charles was still alive. I don't know how. . . he was a mess, bandages and tubes and beeping monitors.

The doctor said he needed an operation. I signed the form they gave me."

Because the injury to his brain had caused such severe swelling, the neurosurgeon recommended that Charles be given a large dose of barbiturates. This would slow the swelling of his brain and cause a barbiturate-induced coma.

Charles' condition deteriorated as his **brain continued to swell**[4]. A craniotomy was performed in which the neurosurgeon removed a piece of his skull. This provided more space for his injured brain and reduced the amount of tissue damage from swelling. The skull fragment was frozen, to be replaced when Charles' condition improved.

Charles remained unresponsive for several days after the surgery. He was in a coma for two weeks. Gradually, his condition began to improve. A month after his accident, Charles was discharged from the acute care unit in the hospital and admitted to a **rehabilitation center**[5]. At that time he demonstrated a growing alertness, but was nonverbal, nonambulatory, and did not have bowel or bladder control. He continued to have a tracheostomy tube.

Utilizing the **Rancho Los Amigos Cognitive Scales for Children**, the rehabilitation staff evaluated Charles' level of recovery. Utilizing the scale designed for school-aged children, Charles was assessed at Level II (see Addendum I).

> ***Charles' mother:*** *"I was so afraid he wouldn't wake up. I would take the twins and we would try to wake him. After he woke up, I was afraid again, afraid that he would never be the same. The worst part was that nobody could tell me exactly what he would be able to do or not do. The doctors and nurses couldn't give me any specifics."*

The total rehabilitation team consisted of a medical doctor, a neuropsychologist, a social worker, occupational and physical therapists, a speech and language pathologist, nurses, and learning specialists. The team began working with Charles within their respective areas of expertise. Daily meetings with family members provided them with information about TBI and the services Charles might need when he was discharged. This team also initiated collaboration between the rehabilitation team and the school.

The neuropsychologist assessed Charles' current cognitive and behavioral functioning and planned a cognitive retraining program. The psychologist worked with Charles and his family, providing counseling and behavioral management services. The social worker helped his mother with insurance forms and accessing support agencies. The occupational and physical therapists taught Charles how to use his wheelchair and exercises to improve physical strength and coordination. The nursing staff not only supported the efforts of the other staff, they kept the team updated on Charles' progress and attitude. The speech

Emergency Medical Care (cont'd.)

8. Blood or fluid replacement treatment is undertaken in order to correct electrolyte balance, reduce intracranial pressure, and reduce fever. Anticonvulsant therapy may be given.

9. Surgery is conducted to clean and repair scalp wounds and fractures. Removal of clotted blood is performed.

10. Patients who are severely injured receive intensive care. This includes constant monitoring and control of blood pressure, pulse, temperature, respiration, and intracranial pressure; charting of vital signs and state of consciousness; care of multiple injuries; and serial CT scans to detect the development of fluid on the brain, swelling, ventricular abnormalities, and the healing of any injury to the surface of the brain.

4

Primary and Secondary Effects
(Mira et al., 1992)

If the head is struck by a moving object or the moving head encounters a stationary object, two types of effects are sustained, primary and secondary.

Primary effects are due to tissue damage occurring at the point of injury. The impact of the injury causes tearing and rotation of the brain.

Secondary effects are physical changes in the brain that will affect the child's status after the injury. Swelling due to fluid build-up is most common. This swelling leads to increased intracranial pressure which further compresses small blood vessels. This deprives brain tissue of oxygen. Brain tissue dies when deprived of oxygen.

5

Acute Rehabilitation Program

When the child who has survived a traumatic injury to the brain becomes medically stable, he/she should be transferred to an acute rehabilitation program. The rehabilitation team, under the direction of a physician who specializes in rehabilitation medicine, develops a treatment program to maximize the extent and rate of the child's recovery.

and language pathologist worked with Charles on relearning language and cognitive strategies. The learning specialist guided the learning of academic material and prepared Charles for re-entry into school.

Two weeks post admission to rehabilitation, Charles began to engage in purposeful behavior. He would follow simple one-step directions. He was verbal, although his speech was perseverative and his comments were often inappropriate. He continued to be significantly disoriented and his attention skills were impaired. Without direction from the rehabilitation staff, Charles' **behavior**[6] was random and impulsive. He was an eager participant in physical and occupational therapies. Although he relied on a wheelchair for mobility, he had begun gait and strength training which would be necessary for future walking.

Charles became more oriented over the next month. However, he still had difficulties with self-control, laughing and crying inappropriately. At this point, Charles had not regained social and academic skills. He was uninhibited in his interactions with others, often touching them inappropriately. His reading, writing, and math skills were far below his grade level expectations. His language and behavior were still disorganized. He could not follow or contribute to a conversation. He would often say things which bore no relationship to the context of what he was doing at the time. He was easily frustrated by failure and became agitated. He did not seem to trust his own judgement. He would ask, "Is that right?" and "Is that what you want me to do?" The rehabilitation staff kept routines consistent and their expectations appropriate for Charles. He required a great deal of patience and redirection from staff and family.

Arnel, one of the twins: *"It was like Charles was our little brother. He would get real mad over nothing. I wanted him to get better, so bad. But no matter how hard I wished, he could never be our big brother again."*

Michael, the other twin: *"We had to spend a lot of time with Grandma. I missed Charles; but I missed Mom more."*

At the end of his second month in the rehabilitation unit, Charles was, for the most part, oriented, and his behavior was purposeful. He knew where he was and he could follow two-step directions. Academic and cognitive skills began to reemerge, but his academic profile was very inconsistent. For example, he had recovered some higher level math skills such as division and multiplication, but he had forgotten how to add and subtract. He recognized words and used some decoding skills, but he could not remember anything he had read from a book.

6

Behavior after TBI (Kehle, Clark & Jenson, 1996)

Students who have experienced a TBI often display a number of behavioral problems. Some of these problems appear immediately after the trauma and gradually decline over time. Some develop when the child returns to home and/or school and is faced with unattainable academic and cognitive demands. Some behavior problems may persist for years after a head injury and can be permanent. While there is no pattern of behavior problems unique to children with traumatic head injury, typical problem behaviors include: overactivity, restlessness, destructiveness, aggression, tantrums, impulsiveness, and socially uninhibited behavior.

Some of these behavior problems are due to the injury itself. Others arise from the child's reaction to the physical, cognitive, and academic deficits. For example, a decreased attention span and inability to attach meaning to common words may impair the child's academic functioning. This in turn decreases self-esteem. Lower self-esteem may lead to acting out.

Impulsiveness and poor judgment in social situations may contribute to poor relationships with peers and family members. Furthermore, increased awareness of these difficulties may lead to depression, anger, and risk taking. All of these problems may be compounded if adults do not recognize the residual deficits, and try to place unreasonable demands on the student.

Charles still appeared unable to understand the physical, cognitive, and intellectual limitations of his injury. As a result, he could not understand why he needed to learn the compensatory strategies suggested by the rehabilitation staff. He did not understand the **implications**[7] of his limitations for his return home and re-entry into school.

Charles: *"Looking back, I guess all I wanted to do was go home. I thought that my teachers and therapists were being mean keeping me in the rehabilitation hospital. I guess I gave them a hard time."*

As his recovery continued, Charles began to feel more like his "old self." However, his capabilities were not at pre-injury levels. Charles would react with temper tantrums and verbal outbursts when he could not do things as he had before the accident.

The staff attempted to engage Charles in **understanding**[8] his own recovery and to increase awareness and acceptance of his deficits. However, these attempts were only marginally successful.

Mrs. Foster, rehabilitation team learning specialist: *"Charles was like many other patients we see here. He knew he was different than he was before the accident, but he didn't know how different he was. Perhaps he realized the extent of his impairments. He was scared and didn't want to accept them. It is important to help patients understand their deficits and become involved in their rehabilitation. Until Charles realized he needed help, he wasn't going to accept it.*

I know this sounds cruel, but we needed to heighten his awareness of his strengths and limitations and not threaten his fragile sense of self-worth.

In order to accomplish this, we did several things. We used his own schoolbooks to do academics, even though he could not do the work. We took him on community outings to the mall, the park, and other places and let him experience natural environments. We asked a former patient to talk with Charles about the difficulties he faced when he returned to home and school. We held group discussions with other patients to provide Charles with an opportunity to increase his awareness of his new limitations in a way that was as non-threatening as possible.

All of this was marginally successful. Charles still wanted to go home and to school. He thought that once he got home, he would be like he was before. He thought we were stopping him."

7

Implications of the Rancho scale for Educators

The Rancho Levels of Consciousness scale for children does not differ greatly from developmental inventories familiar to most educators. Like the developmental inventories, the Rancho scale assesses a child's awareness of and interaction with the environment, the child's orientation to self, other people, and surroundings as well as his or her responses to sensory stimuli. The major difference is that a child with a traumatic brain injury is recovering from a specific event in time. Educators must realize that the traumatic brain injury has implications for the child's immediate needs as well as his or her continued development over time.

8

Psychosocial Adjustments (Deaton & Waaland, 1994)

Cognitive and physical deficits are directly related to the severity of a TBI. The relationship between psychosocial adjustment and the severity of the traumatic brain injury is more complex. With each child, post-injury behavior problems may be due to the injury or could also be attributed to pre-injury behavior patterns. Sometimes, behavior problems reflect pre-injury behavior which has been amplified by the injury. Psychosocial difficulties and ability of the family to adjust to the injury may confound the picture.

After ten weeks, Charles was discharged from the rehabilitation center. He returned home facing long-term physical disabilities resulting from the accident. These physical difficulties included mild tremors and slow, uncoordinated movement in both arms (affecting the right side of his body more than the left). He also was unable to stand without assistance due to poor balance. He could use a wheelchair by propelling it slowly for a short distance.

With less than a month remaining in the school year and because of his limitations, Charles did not return to school. It was decided that he should continue his rehabilitation program as an outpatient for the remainder of the school year and throughout the summer. His program included physical, occupational, and speech therapy.

The learning specialist from the hospital reentry team designed an **academically-based, cognitive rehabilitation program**[9] which used educational materials designed to address Charles' specific cognitive deficits in comprehension, memory, judgment, problem solving, organization, and sequencing. Another focus of his educational program was regaining previous academic skills. A homebound teacher from his school implemented the program.

Before school began in the fall, a comprehensive evaluation was conducted collaboratively by the rehabilitation and school staff. They jointly planned the assessment of Charles' cognitive and neuropsychological functioning. A **discharge planning meeting**[10] took place at the middle school. In attendance were Charles, his mother, his grandparents, school administrators, and staff who would have contact with Charles. A member of the rehabilitation re-entry team attended via speaker phone, providing information about traumatic brain injury and how it affected Charles. School staff who were familiar with Charles before the injury were provided information regarding his current level of functioning. This increased their understanding of Charles' present learning style, patterns of reacting, and physical status. Information provided by the hospital regarding his recent evaluation was used to develop a plan for supporting school success.

Reports from the occupational, speech/language, and physical therapists and neuropsychologist included information regarding the current assessments of Charles' functioning. The information they provided highlighted the classroom adaptations necessary to support Charles' progress in school, information about Charles' behavior, and how to develop appropriate expectations. The reports also provided information regarding his preserved strengths and impairments in specific areas, along with information about Charles' lack of understanding and acceptance of the changes in himself. To see the plan for Charles' re-entry, please turn to Addendum II.

25

9

Academically based cognitive rehabilitation program (Ylvisaker, Szekeres, Hartwick & Tworek, 1994) Utilizing a classroom's academic goals, objectives, and materials as the basis for cognitive rehabilitation can enhance a student's success in the classroom. In Charles' case a daily newspaper was used to improve his reading and listening comprehension. He was asked to identify main ideas and locate sentences containing specific information. He practiced exercises involving following directions, providing rapid retrieval, and reading for detail. Computer activities provided practice in all areas. For example, in one program, Charles was asked to state whether a sentence was a fact or an opinion; this called upon his use of judgment.

10

Discharge Planning Meeting

The discharge planning meeting prior to the student's re-entry to school is used to share knowledge of the child, school, and community resources. Together, parents, teachers, and therapists can identify educational goals, instructional strategies, classroom placements, possible schedules, and plan for implementation. It is also advisable to develop a plan for communication among team members.

Depending upon the individual case, an IEP may or may not be written at this time. The discussion should define the student's strengths and weaknesses. The rehabilitation staff can also provide the school with information about what motivates the student, what to avoid, and what adaptations have been useful (Farmer, Clippard, Luehr-Wiemann, Wright & Owings, 1996).

Staff training was conducted. The middle school staff received in-service training about TBI, characteristics of children who have a TBI, and how to anticipate outcomes and develop educational programming strategies. Comprehensive information about Charles' educational history, his accident, and his injuries was also presented. The staff was informed about the course of his rehabilitation and his current status. They came to understand that children who have experienced an injury to their brains change rapidly and how important their input concerning Charles' behavior and academic changes would be in his education and rehabilitation. Charles' Individualized Education Program (IEP) team met to discuss a **change in placement**[11]. It was decided that Charles would benefit most from a self-contained classroom setting.

School had been in session for two weeks when Charles joined the self-contained, special education class at his middle school.

Things did not go smoothly. At the first follow-up meeting held two weeks after Charles **resumed classes**[12], his special education teacher reported several incidences of aggression toward other students and herself. Mr. Scott, the paraeducator, responded to these incidences by taking Charles out of the classroom and into the gymnasium. The paraeducator reported that Charles had expressed deep sadness over the fact that he had not been able to participate in physical education, his favorite class before the accident. Resistance to therapeutic activities was reported by the physical therapist. In addition, Charles' mother reported that Charles had been more difficult to manage at home. He refused to do his homework and exercises. He argued with her about bedtime and limitations on his activities. He was reluctant to board the bus in the morning.

Mr. Scott, paraeducator: *"I thought that Charles was lazy and mean by refusing to work and just being plain nasty to the other kids. But when I removed him from the classroom and we ended up down at the gym, he told me how sad he was over having to do physical therapy instead of physical education. I realized how much this kid had lost. I came to see how this behavior was his way of communicating with us, how little control he had in his life."*

It was apparent to all involved that Charles was unhappy with **school**[13] and was resistant to the changes made in his schedule and classes. The IEP team began to consider if the placement in the self-contained special education classroom had been appropriate. A less restrictive placement was discussed.

Some of the general education teachers voiced concerns that although the re-entry team had prepared them for what to expect, their own teaching skills were not adequate to address Charles' needs in their classrooms.

11

Change in Placement

As the student moves from the acute rehabilitation program to school, a comprehensive assessment of physical, neuropsychological, educational and social-emotional needs will give the school a clear picture of what to expect. Oftentimes, this assessment will involve input from neurologists, neuropsychologists, and physical and occupational therapists, as well as ophthalmologists (Martin, 1988). It is important that members of the school's diagnostic team participate in the evaluation as much as possible, as data from these assessments will provide important information for the student's IEP or 504 plan.

12

Resumed classes

Upon returning to school, students with severe TBI can have unrealistic expectations. They may not be aware of the full impact of their new deficits. They may lack experience with their new profile of strengths and weaknesses. There may be some psychoreactive denial. They may not be open to suggestions about improving performance, and may be unwilling to monitor their performance and unable to generalize skills and strategies from one task or class to another.

13

School as a vehicle for rehabilitation (Mira et al., 1992)

The student's return to school is not the end point of rehabilitation. Recovery from TBI continues for many months and even years, and the student will be in school while recovery is still taking place. The school offers many of the features that contribute positively to recovery: a regular schedule, commitment to training, and systematically building on previous skills. The availability of specialists trained to provide motor, language, and educational therapies is another positive feature.

The re-entry specialist assured the teachers that although the full impact of a TBI will vary with each student, there are still similarities among these students. She encouraged teachers to modify their teaching methods in terms of broad categories of **intervention**[14] to bring order into Charles' learning and life experiences. Teachers adopted an SOS (Structure-Organization-Strategies) approach to their instruction. See Addendum III for an SOS approach.

Charles' plan was amended to include a physical education program and a 7th grade math class. In addition, strategies for improving **executive functioning**[15] were suggested for his teachers. Executive functioning strategies enable students with TBI to predict and monitor their own performance. Objectives that encouraged **metacognition**[16] were incorporated into his IEP. Metacognitive strategies promote awareness of one's own thinking process. To see how these strategies were incorporated into Charles' plan, turn to Addendum IV.

Ms. Franklin, special education teacher: *"Charles is the first student on my caseload to return to school after such a terrible injury. He really demanded a lot from me personally and professionally. Talk about collaboration, we really had to work together. I learned a lot; the whole team did. I learned that the IEP for these students is REALLY a fluid document, driven by the needs of the student. I learned there is no predictable course of recovery for students with TBI. Sometimes, it seemed like we took two steps backward for every step forward. All in all, I know I'm a better teacher; I think the whole school now looks at accepting individual differences in a new light."*

Charles' aggression subsided with the changes to his program. At the November review meeting, the re-entry specialist suggested that Charles' schedule be expanded. The reaction of the school staff was mixed. To see other changes in Charles' plan, turn to Addendum V.

Dr. Lindsey, middle school principal: *"This was a very intense situation for my staff. I had some teachers who just didn't feel they could handle Charles. They were afraid for his safety. They didn't think they were trained to teach him. The re-entry specialist from the rehabilitation facility did a lot to encourage teachers. After all, good teaching is good teaching."*

It was agreed that Charles' school day would be lengthened to include lunch at the school and the class period following lunch. He was placed with his classmates in a Family and Consumer Science class following the lunch period.

14
Interventions
Charles' teachers utilized both externally focused and internally focused interventions. Externally focused interventions modify the environment and do not require action on the part of the student with TBI. Examples of externally focused interventions include: organizing the student's work area, decreasing distractions, using checklists, or other external clues to enhance student performance or attention. Although the responsibility for the implementation of these interventions belongs to the school staff, the student must be trained to attend to, understand, and respond to them appropriately.

Internally focused interventions include both restorative and compensatory strategies. Restorative strategies attempt to improve the student's cognitive abilities. Compensatory strategies attempt to teach the student to utilize his or her remaining abilities to learn, organize, and problem-solve (Mateer, Kerns & Eso, 1996).

15
Executive Functioning
The executive system includes functions necessary for formulating goals, planning how to achieve them, and carrying out the plans effectively (Lezak, 1982).

16
Metacognition
There are two components of metacognitive functioning: static and dynamic. Static metacognition is the knowledge of one's own cognitive processes and the procedures that can help complete cognitively demanding tasks. The dynamic component of metacognition involves using strategies when they are helpful and modifying them to meet the demands of a task (Ylvisaker et al., 1994).

Ms. Wells, Family and Consumer Science teacher: *"I have to admit that I was a little apprehensive when Dr. Lindsey asked me to attend the team meeting about Charles. I had never had a student with a traumatic brain injury before. We thought that the Family and Consumer Science class would help Charles develop social skills in getting along with his peers. Boy, were we wrong."*

Charles exhibited **inappropriate social behavior**[17] in the Family and Consumer Science class. Despite the fact that Mr. Scott, the paraeducator, accompanied him to this class, Charles was uninhibited in his interactions with the other students. He would attempt to hug other students and made inappropriate sexual comments. He also had an obsession with the food in the kitchen. Charles would attempt to eat the ingredients for class projects before his kitchen team could put the recipe together. After completion of a class project, Charles would consume his portion immediately. If finished products from an earlier class were left, he would insist upon eating them and refuse to join his class for instruction.

Due to concerns from the parents of students in the class, another meeting was held.

Mallory, Abigail, and Megan, Consumer Science students: *"At first we thought it was kind of funny, when C would hug us or say something dirty. But it got real old, real fast. It made us kind of sick to see him hog everything in sight. We told the teachers, and they tried to make him stop. But it only got worse."*

The team reevaluated Charles' placement in the Consumer Science class. Although the original intention had been to improve social skills and to give Charles more opportunity to interact with peers, it was apparent that the experience was not meeting these objectives. Charles needed a more structured classroom setting. It was decided to remove Charles from the Consumer Science class and place him in a Social Studies class. With the placement in Social Studies class, Charles would not have access to food and his interactions with his peers would be more controlled. The team decided to talk to students in the Social Studies class and encourage them to ignore and walk away from Charles when he made inappropriate comments and/or attempted to hug them.

At the following regularly scheduled IEP review meeting, Mr. Cole reported that the inappropriate touching and comments had not been a problem in his Social Studies class. Charles' behavior was appropriate and compliant in his class. He described assigning Charles to work with a cooperative group to do an oral presentation on Iroquois Indians. During Charles'

17
Inappropriate social behavior
The effects of TBI are visible and invisible. The visible effects include physical pain, impaired speech, altered appearance, and loss of physical coordination. The invisible effects can be more damaging. TBI can affect the emotions, behavior, self-concept, and social interactions of the injured student. These invisible effects are known as psychosocial effects and can be more damaging than the visible effects (Deaton, 1994).

Psychosocial effects include "social disinhibition or acting in socially inappropriate ways, irritability, increased emotionality, reduced judgment and motivation, preservation, lowered tolerance for frustration, and egocentricity seen through insensitivity to others, unawareness of their impact on others, and an increase in demanding behavior" (Lehr, 1990).

18
Transition

Transition is defined as a coordinated set of activities for a student, designed within an outcome-oriented process, that promotes movement from school to postschool activities, including postsecondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation.

The Individuals with Disabilities Education Act of 1997 (IDEA '97) requires IEPs to include:

- Beginning at age 14, and updated annually, a statement of transition services needs of the child under the applicable components of the child's IEP that focuses on the child's courses of study (such as participation in advanced-placement courses or a vocational education program).
- Beginning at age 16 (or younger, if determined appropriate by the IEP Team), a statement of needed transition services for the child, including, when appropriate, a statement of the interagency responsibilities or any needed linkages.
- Beginning at least one year before the child reaches the age of majority under State law, a statement that the child has been informed of his or her rights under this title, if any, that will transfer to the child on reaching the age of majority.

portion of the report, he confused fact with fantasy, weaving television stories and movies into the factual part of his report, demonstrating a preoccupation with violence.

Mr. Cole, basketball coach and Social Studies teacher: *"I remembered Charles from before the accident. I really felt badly for the kid. I had always used advance organizers and study guides with my classes, so it really wasn't any extra work to accommodate his needs.*

At first, I audiotaped the class, but following the discussions on the tape was confusing for Charles. It was easier to have another student put a carbon sheet under his notebook page and take notes for him.

I used a lot of cooperative groups and they seemed to work well with Charles. I guess there was enough structure that he didn't get confused. Also, I pretty much stuck to the same routine: class to class and unit to unit."

Charles' mother reported that she had noticed he seemed fascinated by violence on television and was unable to separate factual occurrences from fictional events. This information was shared with the staff at the outpatient rehabilitation center.

Gradually, over the course of the school year, Charles was integrated into school full time. There were sporadic incidences of aggression and inappropriate behavior. However, with the knowledge and understanding of the evolution of symptoms following Charles' traumatic brain injury, problems that could have escalated were managed.

Charles continued to have difficulty accepting his physical and cognitive limitations. School staff continued revising and adapting his educational plan to meet his changing needs and to address behavioral issues that arose.

Ms. Franklin, special educator: *"Next year, we will plan for transitioning Charles into a post-secondary setting and then into the world beyond school. I think his* ***transition***[18] *program will become an essential part of his recovery. He has come so far. Working with vocational educators will help with his long term adjustment, not just to school, but to life."*

Addendum I

Rancho Los Amigos Cognitive Scale:
School Age—5 Years & Older

Level I:
Oriented to Time & Place: Is Recording Ongoing Events

a. Can provide accurate, detailed information about self and present situation.

b. Knows way to and from daily activities.

c. Knows sequence of daily routine.

d. Knows way around unit; recognizes own room.

e. Can find own bed; knows where personal belongings are kept.

f. Is bowel and bladder trained.

Level II:
Is Responsive to Environment

a. Follows simple verbal or gestured requests.

b. Initiates purposeful activity.

c. Actively participates in therapy program.

d. Refuses to follow request by shaking head or saying "no."

e. Imitates examiner's gestures or facial expressions.

Level III:
Gives Localized Response to Sensory Stimuli

a. Blinks when strong light crosses field of vision.

b. Follows moving object passed within visual field.

c. Turns toward or away from loud sound.

d. Gives localized response to painful stimuli.

Level IV:
Gives Generalized Response to Sensory Stimuli

a. Gives generalized startle to loud sound.

b. Responds to repeated auditory stimulation with increased or decreased activity.

c. Gives generalized reflex response to painful stimuli.

Level V:
No Response to Stimuli

a. Complete absence of observable change in behavior to visual, auditory, or painful stimuli (Savage & Wolcott, 1995, p.21).

Addendum II

School Reentry Plan

School re-entry programming included the following components:

1. Prior to Charles' re-entry into his middle school, the IEP team and a representative from the hospital re-entry team spent an afternoon with his peers and teachers discussing brain injury and how the injury could affect personality and academic performance.
2. Charles was served in special education as a student with a learning disability before his injury. A decision to change his placement from a resource setting to a self-contained classroom was made by his IEP team in order to accommodate his academic and cognitive limitations.
3. Charles' school day was shortened because he lacked the endurance required for a full day and because his physical rehabilitation needs dictated that his school program be complemented by ongoing clinic-based occupational and physical therapy. The therapies provided by the school were focused on school-related issues.
4. A paraeducator was hired to support Charles. Initially, the paraeducator assisted Charles on assignments and tasks in his special education class. He prompted him to use the cognitive and academic strategies taught in rehabilitation and during his extended school year program. The paraeducator helped diffuse potential behavioral disruptions and facilitate positive social interactions both in the classroom and in unstructured situations outside of the classroom. As Charles continued to recover, it was planned that the paraeducator would accompany him to general education classes to support him academically and to encourage appropriate behavior. The paraeducator would then gradually fade his involvement as Charles became oriented and more independent.
5. Charles was not to resume physical education activity until the skull bone was replaced. He was to wear a "crani cap" at all times for protection. The paraeducator would supervise Charles when he traveled in the hallway and in the schoolyard.
6. To deal effectively with Charles' emerging awareness of his deficits, the teacher agreed to work closely with the school counselor to promote awareness in a way that was least likely to result in depression or acting out. The counselor agreed to meet with Charles' mother to help her deal firmly and consistently with expected conflicts about homework, therapy schedules, outside activities, and age-appropriate limits on Charles' independence.
7. The school counselor, speech/language pathologist, and special education teacher initiated a social skills group which included Charles, three other students from his special education class, and four students who where considered leaders in academic, social, and athletic endeavors.
8. A schedule of follow-up meetings was planned at regular intervals. In this way, input from all staff would be taken into consideration and changes could be made in Charles' IEP and integration plans as he recovered from his injury.

Addendum III

Structure Organization Strategies (SOS)

Although each and every student with TBI is unique, certain commonalties have been observed in the performance of this group of learners. Teachers can improve instruction by thinking along these commonalties and modify their teaching in terms of the acronym: **SOS**

S stands for structure, the physical organization necessary for maximal learning.

O is for organization, teaching methods used to establish order and relevance in the student's learning.

S refers to strategy development, attempting to instruct the student in the acquisition of various planning and self-monitoring schemes.

In each category there are suggestions for remediation, adaptation, or alternative methods of teaching.

Structure

Students with TBI are often disoriented and have a low tolerance for environmental change. As the student attempts to deal with altered perceptions of the world, often with a lower level of competency, as much structure and stability as possible should be established. Minimal distractions, clear expectations, and a basic routine will allow for a growing sense of security and confidence (Utah TBI Task Force, 1994).

The following tactics should help to establish structural boundaries which will allow the student to focus attentional resources on the demands of learning.

Establish and Maintain a Home School Partnership

Not only does an open relationship between the school and home offer support to both teachers and parents; this relationship can promote adjustment and improve realistic expectations for the student's progress (Waaland & Kreutzer, 1988). Behavioral issues can be consistently programmed between home and school.

Consistent Teaching

Multi-year programming or looping, in which students stay with the same teacher or teachers for more than one year, makes sense for students with cerebral impairments. The extended time together fosters trust, friendships, and an appropriate degree of attachment (Leu & D'Amato, 1994).

Consistent Behavioral Management

Students with TBI often do not grasp cause-effect relations and do not respond to subtle cues. In addition, these students can have problems following directions and making use of unstructured time. Consistent behavioral expectations within the classroom are critical for increasing abilities and strengthening self-control. Routines, as well as brief, clear rules and clear expectations for performance will help eliminate confusion.

Controlled Environment
Study carrels, headphones, ear plugs, and alternative learning areas can provide a variety of levels of stimulation to meet individual learning needs. Some students will learn better in quiet classrooms; however, others need to be around activity in order to learn. The teacher can control the learning environment to meet the needs of the child (Begali, 1994).

Consider Endurance and Stamina
Students with TBI may tire easily. A shortened school day or a time set aside for rest may be necessary. Modified assignments or alternative course requirements may also be considered.

Validating Feelings
Encouraging students to verbalize feelings in a safe environment is important. Talking about the impact of behavior upon one's feelings and the feelings of others can facilitate the development of social competency.

Organization

Telzrow (1990) defines organization as providing students the environmental cues and aids to foster acquisition of new learning and help in the retrieval of previous knowledge. Students with TBI often have difficulty organizing and planning. Reorganizing academic materials and instruction is essential to facilitate learning.

Instructional Tactics
Providing students with a picture of upcoming lessons and activities helps to simplify problems with organization. Advance organizers, preteaching key words and concepts, as well as clearly delineated assignment guidelines can help students develop a framework for content information. Repetition, guided practice, and cues can also focus student attention.

Instructional Adaptations
Teachers may need to adjust expectations for performance and make modifications. Examples include: extending deadlines, sequencing the steps of tasks, reviewing an assignment book on a daily or weekly basis, and providing alternate forms of assessment.

Curricular Modifications
Functional skills should not be overlooked. Educational relevance is especially important for students with TBI. Activities such as greeting skills, telephone use, money skills, using a checkbook, and vocational skills are particularly vital for students with TBI who have particular deficits in daily living skills (Savage & Wolcott, 1994).

Strategies

When a student is affected with TBI, the normal developmental sequence of learning is interrupted. When this is combined with memory problems, the severity of the injury, and the psy-

chological aftermath, learning can become inefficient. Strategy instruction focuses on the cognitive underpinnings of learning, instead of the recitation of content. Students can select various problem-solving methods to utilize in the learning process (Blosser & DePompi, 1991).

Teach Processing

Teachers are usually most concerned with academic strengths and needs. Understanding that learning and processing styles and other approaches can make learning academic content more efficient and beneficial can benefit all learners in the classroom.

Encourage Compensatory Methods

Students with TBI may not be able to improve some skill deficits despite a teacher's best efforts. When "practice does not make perfect," it is best to work around the blocks in a student's learning with a compensatory approach.

Remediate when Necessary

The direct instructional teaching model may be the best technique for focusing skill acquisition in content areas. Remediation is helpful, but most students benefit from instruction in academics, if they have the opportunity to practice the skills in a variety of situations.

Develop Relationships

TBI not only affects a student on an academic and personal level, but on a social level as well. Classmates often have difficulties realizing the differences in the student after the injury. Educating classmates about what to expect and how to help the student with TBI adjust to re-entry will help build acceptance. Using peer tutoring, cooperative learning, and encouraging appropriate interactions between the student and his or her classmates is important to both the student affected with TBI and the other students.

Teach Social Skills

Some students with TBI may need very concrete lessons in appropriate social behavior. Parents and school staff can help with this task. Because school staff can observe the student throughout the day, small groups that focus on the student's strenghs and decreasing deficiencies can be initiated. Cueing, clear expectations, and practice opportunities are parts of a comprehensive program.

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Addendum IV

Encouraging Metacognition and Executive Functioning in the Classroom

Students develop and improve metacognitive and executive functioning skills through general expectations and modeling in the classroom and other settings. The following are some strategies teachers can incorporate in their classrooms to encourage these skills (Ylvisaker et al., 1994):

1. **Metacognitive IEP objectives:** Metacognitive IEP objectives focus on the process of learning rather than specific academic skills. These objectives can be written objectively and be measurable.

   A behavioral objective would state:

   By the end of the IEP period, Charles will accurately complete 8 out of 10 three-digit addition problems, with one regrouping.

   The same skill stated in a metacognitive objective would be written as:

   Charles will predict his performance on a test of three-digit addition problems involving one regrouping. If his performance does not match prediction, he will formulate a correction plan. This correction plan will include one or more of the following:

   a. *A modified prediction.*
   b. *A plan for increased study or practice.*
   c. *A plan for changing his approach to taking the test.*
   d. *A plan for negotiating modifications in the test.*
   e. *A request for additional tutoring.*

   Charles will document all of his activities before taking the test.

2. **Self-Evaluation of Learning:** Students can be expected to write or record a description of their own learning strengths and weaknesses. These descriptions can be updated annually or at each IEP meeting.
3. **Learning Logs:** Used on a daily or less frequent basis, students can note their reflections, insights, reactions, and confusion about their learning process.
4. **Modeling:** Teachers can model self-evaluation with thinking-aloud strategies. Discussions about personal organizational systems, utilizing personal strengths, and compensating for weaknesses can help students generalize these concepts to their own learning. Teachers can also keep and share a personal learning log.
5. **Rating Performance:** Students can be trained to rate their own performance. By establishing a simple system such as "Good," "Fair," "Poor," or "thumbs up/thumbs down," when asked about their effort on a task or test, students can learn to monitor and evaluate their own performance.

6. **Peer Teaching:** "Each one teach one." Students can take turns playing the role of a teacher. This enables the "teacher" to appreciate other students' learning processes. Comprehension of material is enhanced for both "teacher" and "student."
7. **Guided Study Procedure:** Students can be taught a simple routine for studying and completing schoolwork. An example might be:
   a. Identify the task and the reasons for doing it.
   b. Monitor performance during the task: Am I on track? Do I understand this information?
   c. Evaluate performance: Did I achieve my goal? Did I make mistakes? What can I change next time?

   Repetition, review, and modeling will help students integrate this procedure into all learning situations.
8. **Cognitive Vocabulary:** Teachers should use "thinking words" such as "organize," "plan," "decision-making," and "problem-solving."

Addendum V

Revised Plan II

1. Charles' acting-out behavior was expected to increase when he realized he could no longer be a participant in some of the activities that were important to him before the injury. In order to help him feel successful, the teacher agreed to put him in charge of a math study group in the class.
2. Charles' physical education program was designed by an adaptive PE teacher. Enlisting Charles' input, a structured list of activities was developed which included use of the universal gym and hydra-fitness resistive exercise equipment. The paraeducator supervised Charles in the weight room three times a week.
3. In order to promote Charles' metacognitve awareness, "product monitoring" tasks were recommended. Charles would predict his performance on tests and assignments. Predictions, along with his plan to achieve the predicted level of success would be recorded in a log and compared with actual performance. In the event of discrepancy, Charles would be expected to prepare and provide an improvement plan. This was intended to become the functional context within which compensatory strategies would be discussed and promoted. Specific strategies would in all cases be a result of negotiation between Charles and his teacher.

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...A sophomore in high school, captain of the volleyball team, and honor student, Elizabeth had dreams of becoming a doctor. Until one day, when she saddled up her beloved horse, Peaches, and rode into a new life...

41

Case Study II: *Elizabeth's Story*

School had begun two weeks earlier and it was one of those sleepy Saturday afternoons when summer refuses to go away and the calendar seems stuck in July. Deb Baron was at work. She had been a 911 dispatcher for her **rural**[1] Missouri town since it had adopted the new technology. Before that, she had been the police dispatcher. As a result, there wasn't a person in the small town or much that went on that Deb didn't know about.

Although the day was hot, the swimming pool had already been closed for the season. Deb expected a quiet afternoon shift when the buzz of her phone broke the silence.

"911 Emergency," she responded automatically.

"Yeah, this is Fred," said a shaky voice at the other end of the line, "Fred Miller. I'm calling from my cell phone. I was heading home and I saw the whole thing."

Whatever it was, it had to be bad, thought Deb. Fred was not a man to be easily shaken. He was new to the area. But as a large animal veterinarian, he had to be used to emergencies.

Deb took a deep breath, "Fred, this is Deb Barron. What happened?"

"Dan Kennedy's girl got **thrown from her horse**[2]."

"Peaches threw Elizabeth?" Deb struggled to calm the storm of emotion in her mind. For just a moment, she could envision a tall, blonde girl astride her buff colored horse, moving with ease in the show ring.

"Is she breathing?" asked Deb.

"She's breathing and writhing like she's in pain," replied Fred. "But Deb, she's unconscious."

"Oh no," thought Deb, *"**posturing**[3]—a sure sign of a brain injury."*

"Please stay on the line," advised Deb, "Help is on the way."

Quickly Deb notified the local hospital and dispatched an ambulance and paramedics.

A head injury.

Deb's heart sank. Although she had been a dispatcher for awhile, she knew that with this new 911 system and medical technology, the chances of surviving a head injury had improved tremendously. Even so, this could be serious.

As the sound of the siren blared in her headset, Deb heard Fred say, "They're here now, Deb."

1

Traumatic Brain Injury is often called the "Silent Epidemic." With improved emergency care, children who once would not have survived such an injury are getting prompt attention, recovering, and returning to school. An average metropolitan school can expect as many as 100 children a year to suffer head injuries which will impact their education. Small **rural** schools can expect three or four children to return annually after incurring an injury to their brains (Russell, 1993).

2

The majority of head injuries occur in the 15-24 year age range. Vehicular accidents, **recreational activities**, assaults, and abuse also can result in head injuries. Twice as many boys as girls suffer traumatic brain injuries (Mira & Tyler, 1991).

3

Posturing

Victims of head injury often move their extremities in a writhing manner, even though they are unconscious.

The voice of one of the paramedics came over the scanner as he notified the local hospital that they were bringing in a 15-year-old female with a possible head injury. The ER nurse responded that the trauma center at the university medical center had been notified and a helicopter was en route to the county hospital.

Conversation regarding vital signs and medical care ensued as the paramedics readied Elizabeth for the ambulance ride to the county hospital.

At the hospital, Elizabeth was stabilized and evacuated by helicopter to the trauma center, where she was assessed with a severe head injury with a score of seven on the **Glasgow Coma Scale**[4].

Within two hours of being thrown from her beloved horse, Peaches, Elizabeth was undergoing brain surgery.

Elizabeth was comatose for four weeks. For the first two days, it was questionable if she would survive her injuries. An initial head **CT scan**[5] revealed diffuse injury to her brain caused by her collision with a tree. Major damage was particularly noted in the frontal lobes and the left temporal lobe. Her condition was determined to be critical with a severe injury to her brain.

Gradually, Elizabeth became more and more responsive. After four weeks, she could open her eyes on command, respond motorically to commands, and indicate when she needed to be helped to the bathroom. The tracheostomy tube, which had been inserted to help her breathe, was removed, and she could breathe on her own. Elizabeth also began to eat solid food.

4
Glasgow Coma Scale (GCS)
Routinely used to measure depth of a coma and the severity of an injury by grading eye, motor, and verbal responses within 24 hours of the injury (See Addendum I).

5
CT Scan
Computerized Tomography: a radiological procedure which allows physicians to visualize various parts of the brain and determine the extent of the structural damage.

6
Memory disorders after the injury are very common. The brain may not have stored events surrounding the accident. As a result, the child may never **be able to remember** what actually happened. Often, they rely upon what others tell them about the accident. Some children may make up a story about the accident (Mateer, Kerns & Eso, 1996).

After a coma, the child may experience a period of Post-Traumatic Amnesia (PTA). During this time, current events are not stored in memory and the child is unable to maintain a continuous memory of events.

***Elizabeth:* "I can't remember Peaches throwing me[6].**
I can't remember the ambulance or the helicopter.

Really, I don't remember anything before I heard my mom calling my name and crying. But I had this thing in my throat and I couldn't answer her.

The crazy thing was, I didn't know how I got where I was or where I had been. But what was even stranger was that nothing seemed to go together; I couldn't remember names or faces or things that had gone on. My folks would visit me in the morning, leave, and return in the afternoon. But, to me, it was like they had never even been there. I was so confused. I felt like I had dropped onto another planet, like I wasn't really me."

Six weeks after being thrown from her horse, Elizabeth was moved to the hospital's rehabilitation unit to continue her **recovery**[7]. At this time, she was alert and answering simple questions with a yes or no answer. Elizabeth began to receive intensive physical, speech/language, and occupational therapies.

Elizabeth's mother: *"It was horrible, seeing her right after it happened. The helicopter, the surgery, it all happened so fast. I kept thinking, this is not happening, not to my baby.*

I felt so guilty. Why did I let her go out riding that morning? I should have made her finish her chores. Why didn't we make her wear a helmet? We try so hard to keep our kids safe, but we couldn't protect her.

Then to see her in the hospital, so still, so quiet. I did think about "Sleeping Beauty," but with all the tubes and monitors and bandages, she was anything but beautiful.

They told us that even after she woke up that she would never be the same again . . . but nobody could tell us in what way. Would she walk? Would she talk? Would she ever ride her horse again? It was agony."

Elizabeth's father: *"The University Hospital was two hours from our home. We were exhausted, we farmed out Elizabeth's younger brother to neighbors and friends. Her older brother came home from college on the weekends to help out with the livestock. We were living in motel rooms, sleeping in the hospital waiting rooms, and taking turns to be with Elizabeth. We wanted to be there when she woke up. We wanted to be there when she talked and walked. I kept thinking that if she pulled through and we could get her home, she would go back to school. Then everything would be just like it was before."*

During her five-week stay at the rehabilitation center, Elizabeth worked with the rehabilitation facility's speech-language pathologist and neuropsychologist to develop cognitive strategies to help her organize her thoughts and actions. The occupational and physical therapists worked with her to regain strength and coordination. Elizabeth began to relearn basic academic skills through cognitive retraining, and developed learning strategies as she attended the hospital day school. The therapists kept a log of Elizabeth's progress and about what strategies and which modes of instruction were most productive.

Prior to her discharge from the rehabilitation unit, the Student Assistance Team (SAT) from Elizabeth's high school came to visit Elizabeth and her family. They wanted to observe her in therapy and in the hospital day school. This gave the team a chance to discuss the **sequelae of brain injury**[8] as it related to Elizabeth with her physicians and therapists.

7

Recovery Sequence (Tyler, 1992)

Motor: Gross motor functioning such as walking often improves within 1-2 months.

Sensory: These functions also improve rapidly in children.

Communication Skills: Expressive speech skills may recover within a few months, although more subtle language problems may persist for some time.

Memory and Attention: Problems may persist for many months in the case of mild and moderate TBI or even longer in the case of severe injuries.

IQ: In mild head injuries, IQ changes may be slight and the student appears to recover within two months.

Cognitive: Some functions such as information processing, learning complex concepts under difficult situations, and the ability to function effectively and efficiently in novel situations may continue to be impaired for years or permanently.

8

Sequelae are the symptoms that appear after a traumatic injury to the brain. These include (Mira, Tyler & Tucker, 1988):

Physical Effects:
- Reduced stamina
- Risk of reinjury
- Seizures
- Headaches
- Hearing and vision losses

Cognitive:
- Memory deficits
- Intellectual deficits
- Attention and concentration difficulties
- Language impairment
- Speed of processing
- Organization and planning

Behavior and social difficulties

Elizabeth's parents spoke with the special education administrator at her school and received an application for homebound instructional services. Elizabeth's physician completed the application, and it was submitted to the special education division of the state Department of Elementary and Secondary Education. The school arranged to send a **homebound**[9] teacher to Elizabeth's home.

Elizabeth: *"I felt like the 'Comeback Kid.' I was learning things again. It felt great to finally be in control of my life. Don't get me wrong, things were still hard. But I knew I was getting better. I couldn't wait to get home and back to school. I thought that I could put this all behind me, like it had never happened."*

Elizabeth was discharged from the hospital 12 weeks after her fall. Because of her physical limitations and the fact that she fatigued easily, it was decided that she should not return to the demands of school, but instead, continue her rehabilitation as an outpatient at the county hospital for an additional six weeks. Elizabeth's parents felt that if she had her own schoolwork to do at home, her **reentry into school**[10] would be enhanced.

Elizabeth's mother: *"Finally, we brought her home, after all that time living moment to moment at her bedside. Suffering with her through all the therapies, celebrating every gain, and mourning every loss, I was still frightened about her future.*

When we pulled up to our house, it was like the whole town was there. It was a great party. Balloons and flowers were everywhere. Her whole high school class turned out. We were so grateful and happy to have her back with us."

After she was home for two weeks, the SAT team met with Elizabeth and her parents to discuss reentry to school. According to her homebound teacher, Elizabeth had made rapid progress since the initiation of instruction. But, she was not performing at her pre-injury academic level. Her teacher felt that she could benefit from her classes with support and modifications. Although Elizabeth was, at times, difficult to understand, she could ask and answer questions and her physical strength and **stamina**[11] had improved.

Together with Elizabeth and her parents, the team decided to write a Section 504 Plan (see Addendum II), which they felt would be sufficient to accommodate Elizabeth's academic and physical needs and to modify the classroom and curricula to facilitate relearning and new learning. The plan specified accommodations, modifications, and who would be responsible for these changes in Elizabeth's academic and social program.

9

Homebound Instruction
School districts may provide homebound instruction while the student is hospitalized, a patient at a rehabilitation facility, or has been released to recover at home.

10

School reentry planning should ideally begin before the child is discharged from the hospital. When the hospital releases the student, schools need to know (Pollack, Fue & Goldstein, 1995):

- Medical status
- Seizure management
- Medication
- Physical limitations
- Motor skills
- Neurological status
- Self-care skills
- Communication skills
- Behavior patterns
- Cognitive recovery
- Needed assistive devices
- Continuing rehabilitation needs

Criteria for returning to school generally include ability to:

- Sustain attention
- Tolerate the multiple stimuli in the classroom
- Follow directions
- Interact with the environment
- Work in a sustained manner for about 30 minutes

11

Lack of **stamina** and endurance may preclude a child with a traumatic head injury from returning to school right after discharge. However, without the structure of daily rehabilitation or instruction, the child with a traumatic brain injury can lose skills and strategies. Homebound teaching can provide the structured environment and daily stimulation necessary for further recovery. It can also provide the opportunity for diagnostic teaching to identify areas of strengths and concerns.

Elizabeth's father: *"Getting Elizabeth home was the best day of my life. But, in many ways, her homecoming became our second 'crisis.' Now, instead of having a bunch of experts around, we had to watch over her and take care of her. What did we know about taking care of such a seriously injured kid? She looked like our girl, but she was different. When it came to school, I was downright scared. After all, in the hospital, we had specialists who deal with brain injury everyday. How many kids like Elizabeth go back to school? How would the teachers know how to teach her and what she needed?*

After winter recess, Elizabeth **reentered school**[12] for half days. She was happy to be reunited with her friends and attempted to pick up the pieces of her life as a student. After a month back at school, she had regained physical strength and stamina and wanted to attend school full days.

Elizabeth's teachers were concerned about her academic progress. Even with the **Section 504**[13] accommodations for her disability, she had not retained many essential skills which were necessary for her to progress in her classes. Elizabeth forgot critical pieces of information soon after they were presented in class.

The SAT met again and decided to refer Elizabeth to the Multidisciplinary Diagnostic Team to begin the special education process. The Diagnostic Team conducted a screening. Her speech/language pathologist and occupational and physical therapists from the rehabilitation center participated in the meeting through a conference call. Their input was important in order to provide the team with a picture of Elizabeth's recovery and what could be expected. Elizabeth's parents and her homebound teacher were also present.

Although the Section 504 Plan had specified **modifications and strategies**[14] to enhance Elizabeth's success, the Diagnostic Team felt that, based upon Elizabeth's screening results, other management and academic strategies should be initiated as alternative intervention strategies. Elizabeth was provided with textbook guides to use in completing her homework with her peer tutor. Her teachers rewrote assignments to decrease the amount of written work without decreasing the lesson objectives.

Elizabeth: *"I guess I first realized that I could never be the person I was before the accident when I got back to school. I could accept getting tired and having to depend on my teachers and friends, but when I couldn't understand or do my schoolwork, despite everybody's help, I got mad and I was scared. I didn't understand how, but I was not who I was before I got hurt. I had the same body, but I didn't feel the same."*

12
Each child who has experienced a traumatic head injury is unique. Schools should keep in mind that most students will not be the same as they were before the injury. Even if no intellectual changes are present, there may be differences in the processing of information and memory. The ability to sustain attention, make sound judgment, and to control impulsive reactions may be impaired. Students with TBI will change rapidly. Therefore, decisions made at the time of discharge may need to be reviewed and changed before the child **reenters school**.

13
Section 504 has identification requirements similar to IDEA. It is possible for a student with a medical diagnosis of a brain injury to have a mental and/or physical impairment, but not qualify for special education under IDEA. These children can benefit from educational experiences which have been modified to accommodate their unique needs. Classroom intervention and curricular modifications may be all that is necessary for a period of time to ensure that any neurological sequelae have resolved.

14
Strategies which have been shown to increase the success of TBI students in classrooms include (Pollack et al., 1995):
Structuring the class and agenda.
Breaking tasks down into steps or stages. Present these steps in sequential order and in gradually increasing levels of difficulty.
Increasing "Wait Time:" Allowing the student extra time to process information and respond.
Using computers, tape recorders, alarm watches, and calculators in the course of instruction.
Prompting the student with signals, gestures, reminder cards, and written classroom rules.

—Continued

Strategies (cont'd.)

Providing a classroom peer to help the student navigate the school building and follow a schedule.

Adjusting the level of expectations.

Helping the student to use and develop organizational systems.

Pacing the work. Three ten-minute assignments are better tolerated than one half-hour assignment.

Using alternative testing and grading measures.

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In order to maintain compliance with state and federal regulations, eight sequential steps are used in the **process of identification and placement** of students with disabilities. These sequential steps are:

1. Screening
2. Alternative intervention strategies
3. Referral and screening review
4. Development of an evaluation plan
5. Written notice and consent for initial evaluation
6. Evaluation, diagnostic staffing conference and diagnostic summary
7. IEP development
8. Written notice and consent for initial placement

Note: With severe TBI, steps 1-3 are often waived and rehabilitation team evaluations can be used in lieu of a school evaluation.

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A **neuropsychologist** is a Ph.D. level psychologist with two years of specialized post-doctoral training (or equivalent experience). The neuropsychologist specializes in assessment and treatment of cognitive and behavioral consequences of brain injury. Consultation with such a specialist can be quite valuable in targeting changes in functioning, developing strategies for intervention, and making long-term plans.

The team met a month later to assess if the alternative strategies had any effect upon Elizabeth's success in the classroom. A survey of the documentation showed that although there had been some improvement in Elizabeth's retention of information, she still was not able to apply the information in comprehension type questions. Math computation and reasoning continued to be a concern as Elizabeth could do rote number operations, however, she had little concept of what the numerals actually represented. The team decided to proceed to the referral stage. A parent conference was held and Elizabeth's parents gave consent for the evaluation to proceed.

Elizabeth's mother: *"I guess that I had to hope for the best. After all, Elizabeth had recovered from a serious injury. She had beaten the odds. I guess I expected the same miraculous recovery to take place when she returned to school. I was wrong. The teachers tried to help but Elizabeth was still failing and she was getting discouraged. We all were."*

The **Diagnostic Team**[15] formulated an evaluation plan for Elizabeth. The plan included a combination of standardized assessment, formal evaluations, a review of her preinjury academic and social performance, medical history, homebound therapies and instruction, as well as informal observations in various school settings.

In addition, a vocational evaluation was included to assess Elizabeth's needs and plan for her transition from school to "life after school."

The evaluations revealed that Elizabeth, previously a college preparatory student, was very slow to respond to the questioning on a series of standardized tests.

Elizabeth's ability was assessed carefully by a **neuropsychologist**[16] with the Weschler Intelligence Scale for Children (WISC-III) and a series of other measures of cognitive abilities typically affected by TBI. Elizabeth had apparently retained much of her **intellectual ability**[17] as her test results revealed above average ability.

Despite this retained intelligence, Elizabeth displayed significant cognitive processing weaknesses. Deficits were seen in flexibility of thought, expressive language, memory, speed of processing, and abstract reasoning. The neuropsychologist pointed out ways these problems were likely to affect Elizabeth in the classroom and made suggestions for treatment interventions.

The special educator, in consultation with the neuropsychologist at the rehabilitation center, utilized both informal and formal testing to formulate a clear picture of Elizabeth's skills. Elizabeth's reading assessment revealed that her reading fluency was slow and halting, she had little understanding of what she read, and she had difficulty answering comprehension questions

related to vocabulary, cause and effect, and sequence. Elizabeth's math skills were limited to rote operations; she had difficulty with story problems and with complex math operations (see Addendum III).

Elizabeth's handwriting was sloppy, but still readable. Copying written material from the board or a book was difficult for her. She took a long time to complete the tasks and left out words and punctuation and transposed letters.

Elizabeth was observed in various school environments by several members of the diagnostic team. It was noted that she could focus on the teacher during instruction; however, her ability to sustain attention was affected by usual classroom distractions (other students coughing, pencils dropping, pens clicking). She had difficulty formulating questions which were understandable to her teachers.

Elizabeth's father: *"All I wanted to know was could my girl still learn anything? Would she graduate from high school? Would she go to college? Nobody would give me a straight answer. The only thing I knew about special education was that the 'slow kids' needed it. Elizabeth was definitely not slow! I didn't want to put her in special education.* ***I wanted to know exactly what Elizabeth needed and how the teacher was going to provide it***[18]*. I didn't know if I could trust this teacher or how I would know if Elizabeth was learning anything."*

Elizabeth retained her large circle of friends. She sat with friends during lunch and walked with them between classes, however, she rarely initiated conversations and spoke only when spoken to.

Prior to the accident, Elizabeth had been an active member in a community service organization and secretary of the Health Sciences Club. She had not resumed her membership in either activity. It was also observed that Elizabeth seemed to need to recuperate in the nurse's office more frequently during classes in which she was not performing well.

At the Diagnostic Staffing conference, it was determined that Elizabeth qualified for special education services. Her inability to acquire and retain new skills and to generalize previously learned skills met IDEA and Missouri's criteria for Traumatic Brain Injury (see Addendum IV).

Another meeting was held to draft Elizabeth's Individualized Education Program (IEP). Strategies, modifications, as well as Elizabeth's goals and objectives were discussed as the IEP was formulated (see Addendum V).

The results of Elizabeth's vocational evaluation were presented to the team. The necessary components of transitional planning were discussed. The counselor who had administered the

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Intellectual Ability

Despite normal scores on intelligence tests, students with TBI can have difficulties in processing and acquiring new learning. It is wise not to use intelligence versus achievement test scores to decide placement or programming for the child with a traumatic brain injury.

Academic achievement tests will show the basic academic levels the student has retained or recovered. These tests cannot predict future academic progress for the student with TBI. Also, they may inflate estimates of the child's ability to learn (Ylvisaker, Szekeres & Tworek, 1994).

Intelligence tests provide some information as to how much previously learned information the child has retained. They do not demonstrate the subtle cognitive problems that may affect new learning in the classroom. However, it should be noted that IQ tests like the WISC-III can be misleading and may not reflect significant changes in other aspects of cognitive functioning that interfere with academic progress (e.g., memory, language processing).

18

School staff can **explain the child's learning difficulties in understandable terms.** Teachers can show parents classroom materials and expectations. Parents can be encouraged to observe their child in classrooms and see strategies which enhance learning (Pollack et al., 1995).

19

The adolescent with TBI often will cling to preinjury **vocational choices**. Counselors and prevocational staff can help the student reconcile current cognitive and physical abilities with career goals. In addition students can research career options and explore college programs with provisions for special needs students.

20

The long break over summer can be detrimental for the student with TBI. **Extended School Year (ESY)** and summer programs can prevent backsliding and help retention and recovery.

21

Developed by Forest & Lusthaus (1990), **MAPS** is an integrated systems approach designed to help plan for the integration of students with challenging needs into their age-appropriate classrooms. The planning team's discussion is focused on seven key questions:

1. What is the student's history?
2. What are the family's dreams for the student?
3. What are their nightmares?
4. Who is this student (characterize him or her)?
5. What are the student's strengths, gifts, and talents?
6. What are his or her needs?
7. What is the ideal school plan for the student (environment, goals, objective, and activities)?

vocational assessment[19] acknowledged that Elizabeth still held onto her dreams of going to medical school to become a doctor and that she had no other real career interests. The counselor suggested that she be given the opportunity to explore other careers. In keeping with Elizabeth's interests prior to the accident, the opportunity to shadow various medical professionals was suggested. Although she was limited at this evaluation, further recovery was expected which could improve her retention of information and skills. The evaluator felt that Elizabeth could be successful in a post-secondary setting with adequate support services. She also would encourage Elizabeth to consider vocational experiences while in high school (see Addendum VI).

Elizabeth would need to meet graduation requirements and admission requirements of a post-secondary setting. The team identified the need for specialized transition services and/or support in the areas of career planning options, transportation, recreation/leisure, self-advocacy, and living arrangements (to see Elizabeth's transition goals and objectives turn to Addendum VII).

The IEP team also determined that Elizabeth would qualify for **Extended School Year (ESY)**[20] because the team was unsure of how much new learning she would retain over the summer months.

Elizabeth: *" I was not happy about going to school in the summer. If I still were the 'old Elizabeth' I would not have to go to summer school, but the 'new Elizabeth' had to go. I felt really dumb. But I figured maybe if I went, I could turn back into the 'old Elizabeth' again."*

In the fall of Elizabeth's junior year, another IEP meeting was held. Resource assistance was continued as was the procedure of checking with the teacher for daily work and assignments. Elizabeth's friends still accompanied her to classes and the extra passing time was still needed. Academic strategies and curricular modifications were continued. At this time, the **Making Action Planning System (MAPS)**[21] a process for long term and transition planning, was undertaken.

Through this process, Elizabeth's progress and hard work was acknowledged. Her strong support systems including her family, friends, teachers, and the rehabilitation team were identified as necessary in helping her to succeed. Elizabeth and her family dreamed she could continue to pick up the pieces of her life and attend medical school after graduation. Although they had looked into living arrangements at local colleges and other post-secondary vocational institutions, her parents still expressed fears of her living away from home. They were working with the rehabilitation team to help Elizabeth get her driver's license and had adjusted to the prospect of a teenage driver.

Elizabeth's mother: *"I didn't like the idea of Elizabeth being in 'special education,' but I did like the results. Thanks to her teacher and programming, Elizabeth began to get back on her feet, at least academically. In my heart, I still wanted her to go on to college and medical school, but I was beginning to realize that* ***her life was probably going to turn out differently***[22]*."*

Elizabeth had shadowed several job options. She had followed a physician's assistant through her routine at a busy clinic. She had tried her hand at a medical receptionist's job. Elizabeth had also shadowed her former kindergarten teacher. Elizabeth had enjoyed the kindergarten experience so much that she applied to and was accepted into the high school's Cadet Teaching Program. She spent several hours a week as a volunteer in the elementary school.

Elizabeth: *"I was glad that I had the opportunity to try out different jobs. 'Old Elizabeth' wanted to be a doctor. She loved the whole idea of wearing a stethoscope and a white coat and feeling important. 'New Elizabeth' hated all that medical stuff. Maybe it was because I had already spent enough time in the hospital. When Mrs. Churchill, my old kindergarten teacher, let me come into her class, the kids made me feel like I belonged there. I hadn't felt that way for a long time."*

Elizabeth began her junior year hopefully and in good spirits. Initially, she made good progress in her classes. However, by the middle of the semester, things had changed. Elizabeth began to **demonstrate inappropriate behavior**[23]. She had become a class clown who took every opportunity to distract the class. Teachers were becoming impatient with the constant need to discipline and redirect her. In addition, Elizabeth had also begun to skip her sessions in the resource room.

The resource teacher initiated a review conference with the members of Elizabeth's IEP team. At this review, Elizabeth demanded that she no longer be required to attend the resource program for academic help and that she take all regular education courses. The team acknowledged Elizabeth's desire to be 'like she was before' and her feelings of being overwhelmed. This was combined with her feelings of alienation from her friends and favorite teachers. It was also brought to the team's attention that several of Elizabeth's teachers were new to the school and had not been informed about the unique needs of a student with TBI.

22

The recovery time is an emotional roller coaster for parents. Experiencing denial, guilt, anger, and mourning, they have not had to consider long range planning. Now, when faced with the big picture of how the brain injury will impact their child's learning, they may be conflicted as to how to deal with school staff. They **want to know how their child's education will be affected** and how the school can help, but they may be reluctant to acknowledge the need for special services (Ylvisaker et al., 1994).

23

Changes in appearance, coordination, and school placement can be devastating for adolescents with traumatic brain injury. Some students may become depressed or **rebel against the necessary changes** and lack of freedom. It is not unusual for social and behavioral difficulties to appear months after an injury.

Elizabeth: *"It felt like I was crazy. The more I wanted to be like the 'old Elizabeth', the more I acted like somebody I didn't even know. I hated being in special education and having to spend time in the resource room, but at the same time I didn't do my work and acted weird. So I had to leave my regular classes anyway.*

I stopped going out with my friends, mostly because I got these headaches. It was hard to pay attention to a movie or talk to anybody at a party. Besides, the way I was acting, nobody wanted to put up with me anyway. I wanted to 'get a life'. ***I wanted my old life back***[24]*, but the brain injury had stolen it."*

The teachers were given copies of Elizabeth's evaluations and asked to watch a videotape of her recovery. Members of Elizabeth's rehabilitation team made themselves available for questions and concerns. It was decided that Elizabeth would meet with the resource teacher on a flexible schedule and that the resource teacher would still check her assignments and calendar prior to the start and at the end of the school day. It was recommended that Elizabeth's parents consult with their doctor and that private counseling be initiated. Elizabeth was also given the opportunity to meet with the school counselor whenever she felt the need.

Elizabeth finished her junior year with passing grades. Her problematic behaviors subsided, and she resumed some of her old friendships.

At her spring IEP conference, it was decided, due to her previous aversion to school, that Elizabeth needed a break over the summer. She found a part-time summer job working in a childcare facility. Elizabeth also received her driver's license after an evaluation at the rehabilitation facility.

Elizabeth's father: *"Elizabeth started to call herself 'Dummy.' She said she should have died in the accident. She couldn't remember what happened from one day to the next. She still remembered what she was like before. Our counselor said that it would take Elizabeth a long time to develop a new 'sense of self.' I was so worried about what she would do to herself. I had been so happy to get her home and alive that I thought the hard part was over. It had been a year since the accident and* ***the hard part was just starting***[25]*."*

24

Even though students who have experienced a traumatic brain injury may have problems with memory they do not generally forget what they wanted "to be" before their injury. Depression is common for many students (Pollock et al., 1995).

Teachers need to help students recognize the things they can do rather than what they cannot do.

Be an active listener for students who need to talk and focus on the positive feelings the student displays. Let the student's counselor know of sensitive matters so that they can be addressed.

If the student expresses suicidal thoughts, immediately contact the school counselor and the parents.

25

A traumatic brain injury is a sudden and drastic **intrusion into the life of a family**. Families react with coping strategies that reflect their functioning. Family coping styles can either help or hinder the child's recovery (Savage & Wolcott, 1994).

Elizabeth was a happy and energetic student at her fall IEP conference. She had decided to pursue a career as a teacher, having enjoyed her work at the childcare center over the summer.

The special education teacher had invited a representative from the local community college to the IEP and planning meeting. This representative provided information concerning the college's academic support center for students with disabilities. He stressed that upon graduation from high school, Elizabeth would no longer be entitled to academic assistance from the district, but would be eligible for help upon her request. Elizabeth had also met with the academic support advisor and felt comfortable with the situation. Her parents were very receptive to the prospect of Elizabeth going on to postsecondary schooling, and felt secure in the fact that she could live at home.

Elizabeth's new schedule consisted of regular senior classes with an hour in the resource room for help.

Elizabeth: *"Slowly, I began to see a future for myself. At first, I had been busy just surviving each day. Then I tried to do everything I could to be like I was before. That didn't work. I found out that I could never be the same.*

When I took my driver's test, I felt so normal. I could drive. I could get around on my own. I was sort of free.

The day after I passed my driver's test, I rode Peaches. My mom made me wear a helmet. She's a real mother hen to me now.

When I got up on Peaches, it was familiar, but different. It was just like a lot in my life since the accident. . . things seem the same, but they're not."

At the end of the first semester, Elizabeth was receiving passing grades in all of her classes. Her depression had lifted and she maintained a busy social schedule. She was a member of the Future Teacher's Club and continued with the Cadet Teaching Program.

Elizabeth's father: *"It was really something at graduation. When her name was called, everyone applauded; then her class stood and soon everyone in the auditorium was on their feet. We were so proud, so happy. We felt like we had weathered a bad storm and the sky was finally blue again."*

Elizabeth graduated with her class. After inquiring at the academic support center at the local community college, she made arrangements to receive tutoring and help with her classes. She did plan to attend the local community college for one year to complete the coursework for a Certificate of Proficiency in Child Growth and Development. Upon receiving her certificate, Elizabeth planned to work in a childcare facility.

Elizabeth: *"I guess I made it. I know that I will never be who I was or whoever I could have been before the day when Peaches stumbled and threw me into that tree. I've finally learned to accept who I am now. I can succeed at school and at life. I may need more time and help and patience. But I can do it."*

The story of Elizabeth was adapted from:

Tyler, J.S. (1992). *Traumatic brain injury preservice training module*. Kansas City, KS: University of Kansas Medical Center.

Mira, M.P., & Tyler, J.S. (1991). Students with traumatic brain injury: Making the transition from hospital to school. *Focus on Exceptional Children, 23*(5) 1–12.

Savage, R.C., & Wolcott, G.F. (1994). *Educational dimensions of acquired brain injury*. Austin, TX: PRO-ED, Inc.

Addendum I

Glasgow Coma Scale (Begali, 1992)

Eye Opening (E)

- Spontaneous ---------- 4
- To Speech ---------- 3
- To Pain ---------- 2
- No Response ---------- 1

Best Motor Response (M)

- Follows Commands ---------- 6
- Localization of pain ---------- 5
- Withdrawal from pain ---------- 4
- Flexion to pain ---------- 3
- Extension to pain ---------- 2
- No response ---------- 1

Verbal response (V)

- Oriented ---------- 5
- Confused conversation ---------- 4
- Inappropriate words ---------- 3
- Incomprehensible sounds ---------- 2
- No response ---------- 1

Coma Score = E + M + V

1. Eye opening: Failure to open the eyes or to do so only in response to pain is a feature of coma. Spontaneous or noise-induced eye opening, which occurs normally, is what differentiates coma from sleep.

2. Motor response: The upper limbs, which generally show a greater range of movement than the lower limbs, are used to assess a motor response. In the event a patient offers more than one type of response during the course of a single examination, the best motor response is used.

3. Verbal performance: Speech is classified as oriented (normal), confused, inappropriate, incomprehensive (grunts, groans), or absent.

Classification of Glasgow Coma Scale Totals

Sum of Patient Responses:	*Degree of Severity:*
13-15	*Mild*
9-12	*Moderate*
3-8	*Severe*

Addendum II

504 Accommodation Plan

- Elizabeth's daily schedule was changed. It was decided to move her academic classes to the morning. Elizabeth would attend school half a day until her physician determined that she could handle a full day.
- Elizabeth would have a friend to accompany her to class and she would have more time to move between classes. In addition, she would be allowed to recuperate in the nurse's office when she felt particularly fatigued.
- Elizabeth would meet with the speech/language pathologist from the medical facility to continue with the cognitive strategy training. These meetings would be scheduled in the guidance office during her second period English class twice a week.
- Elizabeth would meet with her homeroom teacher before school each day to make sure she had the right books and supplies for her classes. Each day, prior to going home, she would check out with the homeroom teacher regarding the next day.
- Elizabeth would keep a daily log of things to do and a calendar of upcoming events. Her teachers would provide written structured outlines of all her academic classes. She would be given an extra set of books to keep at home so she would not need to carry books back and forth. Adaptive physical education would be initiated in order to help Elizabeth regain physical coordination and strength. A paraprofessional would be assigned to accompany her to the adaptive physical education class.
- Elizabeth would also receive copies of class notes photocopied from a volunteer student in each of her classes.
- Elizabeth's friends would be available to help peer tutor her in subject area assignments. Her friends also agreed to informally plan one social activity each weekend.

In addition, members of Elizabeth's rehabilitation team together with the SAT would set up afternoon training sessions on Traumatic Brain Injury for Elizabeth's teachers.

Addendum III

Results of Formal Educational Tests

The special education teacher utilized the Woodcock-Johnson Psycho-Educational Battery (Part Two, Test of Achievement). Elizabeth obtained the following scores (x = 100, SD = 15):

Woodcock-Johnson Psycho-Educational Battery

Cluster	Age Equivalent	Grade Equivalent	Percentile Rank	Standard Score
Reading	15–11	10.4	50	100
Math	15–0	9.4	42	97
Written Language	12–4	7.0	24	89
Knowledge	13–6	8.5	28	91

On the Burns/Roe Informal Reading Inventory, Elizabeth obtained the following scores:

Burns/Roe Informal Reading Inventory

Passage Grade Level	Word Recognition	Comprehension
6	50%	40%
7	46%	50%
8	30%	50%
9	24%	36%
10	read silently	40%
10	listening	50%
11	read silently	20%
11	listening	40%
12	read silently	10%

When the comprehension questions were analyzed, Elizabeth experienced most difficulty with questions relating to vocabulary that was used in the stories (27% correct); she scored highest on questions relating to cause and effect (75%) and sequence (66%).

On the Test of Mathematical Abilities (TOMA), Elizabeth obtained the following scores (x = 10, SD = 3):

Test of Mathematical Abilities

Subtest	Standard Scores	Percentiles
Attitude toward math	17 (above average)	99
Vocabulary	10 (average)	50
Computation	10 (average)	50
General information	5 (below average)	05
Story problems	7 (low average)	16
		TMQ = 98 (x = 100, SD = 15)

On the Test of Written Language (TOWL-2), Elizabeth obtained the following scores:

Test of Written Language

Subtest	Percentiles	Standard Scores
Vocabulary	25	8
Spelling	9	6
Style	25	8
Logical sentences	91	14
Sentence combining	91	14
Thematic maturity	50	10
Contextual vocabulary	5	5
Syntactic maturity	9	6
Contextual spelling	9	6
Contextual style	50	10

Written language quotient: contrived writing = 100, spontaneous writing = 82, overall written language = 91.

Elizabeth was asked to copy a 75-word passage from a fifth grade social studies textbook. It took her 16 minutes and 20 seconds to copy the section. She left out 12 words, 2 periods and the endings on 4 words. She transposed 2 words. Her handwriting was sloppy but legible.

Elizabeth was also asked to copy written material from the board at the front of the room. Again, she had difficulty with speed on this task. During a 5-minute period, she copied 18 words with two mistakes.

Addendum IV

Missouri Definition of TBI

The Missouri Department of Elementary and Secondary Education (1994) defines Traumatic Brain Injury (TBI) as:

Acquired injury to the brain caused by an external event resulting in total or partial functional disability or psychosocial maladjustment that adversely affects educational performance. The term includes open or closed head injuries resulting in impairments in one or more of the seven areas of functioning. Common characteristics associated with TBI may include:

Vision: Blurred vision, double vision, or loss of field.

Hearing: Tinnitus or hearing loss.

Health/Motor: Seizure activity, physical function impairments such as paralysis, spasticity, ataxia, apraxia, or physical performance impairments such as strength, stamina, or slowed motor speed.

Cognitive/Adaptive Behavior and Academics (includes readiness and transition): Deficits in attention, concentration, short-term memory, capacity for new learning, retrieval of old learning, comprehension, calculation, organization, problem solving, generalization, initiation, and/or rate/efficiency of information processing. Inconsistent performance, increased mental fatigue, and reduced functional daily living skills may also be noted.

Speech/Language: Disturbances in receptive/expressive language functions and/or motor speech abilities including, but not limited to, aphasia, dysarthria, and/or apraxia.

Social/Emotional: Mood swings, lack of impulse control such as aggressive or sexual acting-out, inappropriate childlike behavior, decreased judgment and frustration tolerance, emotional responses to the injury and sequelae, memory of normalcy including denial, anger, or depression.

Missouri Eligibility Criteria for Traumatic Brain Injury

After completing all previous steps required in the special education process, the multidisciplinary team may determine that a student has a TBI if all of the following criteria are met:

1. The student has a medical diagnosis of head injury.
2. The student's educational performance is adversely affected by deficits in acquisition, retention, and/or generalization of skills. Students with brain injury may have rapidly changing profiles, therefore, educational assessment should include current documentation of the student's functional capabilities and indicate deficits in one or more of the following areas:

58 *Continued*

a. Building or maintaining social competence
b. Performance of functional daily living skills across settings
c. The ability to acquire and retain new skills
d. The ability to retrieve prior information

3. The educational deficits are not PRIMARILY caused by:

- Visual, auditory acuity, or motor deficits
- Behavior disorder/emotional disturbance
- Mental Retardation
- Language or learning disability
- Environmental or economic disadvantage or cultural differences

It must be emphasized that the presence of criteria can only be determined by "appropriate diagnostic information" which would include a comprehensive medical report from a licensed physician and a comprehensive multidisciplinary evaluation by qualified personnel as specified in the evaluation plan. Personnel with an understanding of the sequelae of TBI may be helpful in the assessment process.

NOTE: If steps 2 and 3 of the criteria have been met and there is:

a. Substantial data to document a medical basis for a head injury other than a medical diagnosis, or
b. a neuropsychological assessment,

and this diagnostic information supports the conclusion that a head injury did occur, the multidisciplinary team may use this information in the absence of a physician's diagnosis of head injury.

Addendum V

Individualized Education Program (IEP)

Annual Goal I

At the end of the fourth grading period Elizabeth will demonstrate increased attention and response skills.

1. **Short-Term Objective:** By the end of the first grading period, in a collaborative class setting, and with attention cues from the teachers, Elizabeth will make and maintain eye contact with either the teacher or task for at least 20 minutes during an instructional period.
2. **Short-Term Objective:** By the end of the second grading period, in a collaborative class setting Elizabeth will complete four out of five assignments within the class period.
3. **Short-Term Objective:** By the end of the third grading period, in a collaborative class setting, and with class notes, Elizabeth will demonstrate accurate recall of the content of the lesson by answering four out of five questions posed by the teacher in a "Quick Question" task.

Annual Goal II

At the end of the fourth grading period in a general classroom setting, Elizabeth will follow three task directions in sequence.

1. **Short-Term Objective:** At the end of the first grading period, in a 1:1 instructional setting, Elizabeth will follow three task directions in the sequence given for all trials on three consecutive data days.
2. **Short-Term Objective:** At the end of the second grading period, in a small group instructional setting, Elizabeth will follow three task directions in the sequence given for all trials on three consecutive data days.
3. **Short-Term Objective:** At the end of the third grading period, in a collaborative class setting and utilizing peer assistance, Elizabeth will follow three task directions in the sequence given for all trials on three consecutive data days.

Annual Goal III

At the end of the fourth grading period in a small group instructional setting, Elizabeth will demonstrate improved reading fluency and increased phonetic and comprehension skills.

1. **Short-Term Objective:** By the end of the first grading period, in a small group instructional setting, and when given a reading passage at the 3rd grade instructional level, Elizabeth will read 100 WCPM (words correct per minute) on three consecutive data days.
2. **Short-Term Objective:** By the end of the first grading period, in a small group instructional setting, and when given a list of ten phonemically accurate words, Elizabeth will decode eight of these words accurately on three consecutive data days.

—Continued

3. **Short-Term Objective:** By the end of the second grading period, in a small group instructional setting, and when given a reading passage at the 4th grade instructional level, Elizabeth will read 90 WCPM (words correct per minute) on three consecutive data days.
4. **Short-Term Objective:** By the end of the second grading period, in a collaborative class setting, Elizabeth will utilize the context of a reading passage at her instructional level to give the meaning of previously unfamiliar words at mastery level (80% accuracy) on three consecutive data days.
5. **Short-Term Objective:** By the end of the second grading period, in a collaborative class setting, Elizabeth will utilize the context of a reading passage at her instructional level to give the meaning of previously unfamiliar words at mastery level (80% accuracy) on three consecutive data days.
6. **Short-Term Objective:** By the end of the second grading period, in a collaborative class setting, Elizabeth will utilize the context of a reading passage at her instructional level to give the meaning of previously unfamiliar words at mastery level (80% accuracy) on three consecutive data days.
7. **Short-Term Objective:** By the end of the third grading period, in a small group instructional setting, and when given a reading passage at the 4th grade instructional level, Elizabeth will read 120 WCPM (words correct per minute) on three consecutive data days.
8. **Short-Term Objective:** By the end of the third grading period, in a small group instructional setting, and when given a passage at her instructional reading level, Elizabeth will recount the main idea and three supporting details of the passage on three consecutive data days.
9. **Short-Term Objective:** By the end of the third grading period in a small group instructional setting and when given a passage at her instructional reading level, Elizabeth will predict reasonable outcomes, draw conclusions, make accurate inferences and interpretations of the material read on three consecutive data days.

Annual Goal IV

At the end of the fourth grading period, given a computer with a word processing program, and 1:1 assistance, Elizabeth will formulate writing assignments, using the grammar and spell checks to edit. Elizabeth will produce at least five modified written products per grading period meeting the requirements of her instructors.

1. **Short-Term Objective:** At the end of the first grading period, in a small group instructional setting, Elizabeth will demonstrate acquisition of a sentence writing strategy by reciting the strategy from memory, defining the terms of the strategy, and explaining the rationale for learning the strategy.

2. **Short-Term Objective:** At the end of the second grading period, in a small group instructional setting, Elizabeth will apply this strategy to written products. She will utilize complete sentences 100% of the time on five written products. She will utilize at least three sentence formulas in these products. At least 50% of the sentences in the products will be compound, complex, or compound-complex. At least 66% of the compound and compound-complex will be punctuated correctly.
3. **Short-Term Objective:** At the end of the third grading period, Elizabeth will maintain mastery level, as denoted in Short-Term Objective 2, on at least 80% of her written assignments. She will explain to her peer tutor how this strategy was used to formulate and write sentences.
4. **Short-Term Objective:** At the end of the third grading period, Elizabeth will utilize this strategy without prompting and explain her rationale for selecting this strategy to write sentences.

Annual Goal V

At the end of the fourth grading period, given small group instruction and with the assistance of a peer tutor, Elizabeth will utilize a cognitive-metacognitive strategy for solving mathematical problems.

1. **Short-Term Objective:** At the end of the first grading period, in a small group instructional setting, Elizabeth will demonstrate acquisition of this strategy by reciting the strategy from memory, defining the terms of the strategy, and explaining the rationale for learning the strategy.
2. **Short-Term Objective:** At the end of the second grading period, in a small group instructional setting, Elizabeth will apply this strategy to assigned mathematical problems. She will demonstrate improved accuracy of 30% over her baseline performance on a task of five story problems on three consecutive data days.
3. **Short-Term Objective:** At the end of the third grading period, Elizabeth will maintain mastery level on repeated assessments of her mathematical problem solving skills. She will explain to her peer tutor how the strategy was used to solve assigned problems.
4. **Short-Term Objective:** At the end of the third grading period, Elizabeth will utilize this strategy without prompting and explain her rationale for selecting this strategy to solve math story problems.

Addendum VI

Vocational Evaluation Report

An interest survey showed that Elizabeth had strong interests in working with people. Although she did show above average interest in the medical field, she was most interested in being placed in a helping role.

Her dexterity and coordination skills were somewhat below average. Elizabeth's spatial skills, (color, tactile, size/shape discrimination), and form perception skills were average. Elizabeth's numerical abilities were assessed at slightly below average and her verbal aptitude was average.

Elizabeth had some difficulty following verbal directions. She also experienced difficulties following the written instructions (written on a sixth-grade level). However, she was able to follow diagrammatic demonstrations and pictorial instructions quite well.

Elizabeth was dependable and cooperative over the one-week evaluation period. However, she became frustrated easily and would not persist on some tasks. The guidance counselor who did the evaluation stated that Elizabeth had reported to her when she had finished each assignment.

The counselor also reported that Elizabeth had difficulty asking for help. Otherwise, she worked well independently and produced quality assignments. Elizabeth was somewhat distracted by others. She also seemed to hurry her work when she was being timed.

Elizabeth had some familiarity with basic tools, but had no real interest in learning about them. She accepted task changes and organized her tasks appropriately, once she understood the assignment. Elizabeth accepted criticism and praise appropriately.

Elizabeth's grooming was good. She was very pleasant and responded appropriately. Elizabeth did not initiate conversations with the counselor.

Elizabeth's grasp of money concepts was below average. She had difficulty with measuring. When give a job application, she needed assistance reading and filling it out. Elizabeth had no knowledge of the public transportation system.

Addendum VII

Transition Goals and Objectives

Elizabeth's transition goals and objectives included:

I. Instruction

1. Elizabeth will demonstrate assertiveness in practice interview and role playing situations.
2. Elizabeth will develop a budget and maintain basic living expenses.

II. Community Experience

1. Elizabeth will provide a list of transportation options to needed sites.

III. Employment

1. Elizabeth will determine a career choice in her junior year.
   - **A.** Elizabeth will shadow at least five different career possibilities, based upon the counselor's suggestions and vocational evaluation.
   - **B.** Elizabeth will write a personal resume, complete a job application and practice job interviews.
   - **C.** Elizabeth will develop a list of personal strengths and weaknesses pertaining to her career options.
   - **D.** Elizabeth will develop a list of supports and accommodations necessary for her to continue in postsecondary education.

IV. Adult Living

1. Elizabeth will explore her values and how she gets her needs met through role-play, discussion, and her sessions with the guidance counselor.
2. Elizabeth will examine living accommodations at postsecondary vocational settings.
3. Elizabeth will actively participate in the club of her choice as evidenced in committee assignments, becoming an officer, and attendance at meetings and events by the end of her junior year.

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...School had always been difficult for Chris. He had been placed on medication in an attempt to manage his behavior. He was the product of numerous behavior improvement plans. He had been moved from foster home to foster home until a caring foster mother, teacher, and principal looked into his past... 67

Case Study III: *Chris' Story*

Prologue...

"Hey, big guy," said the young resident, as she entered the emergency cubicle. "How 'ya doin'?"

This was the third day of Jolene's residency in the city hospital emergency room. She wanted to make emergency medicine her life. She loved the hectic pace and excitement of this place, even though the hours were long and the needs of her patients were demanding.

"The nurse said that he needed stitches," commented a voice from the chair in the corner.

"You his mom? Hi, I'm Dr. Jolene Scott," replied the resident.

"Yeah, I'm his mom. My name's Tiffany," replied the slight woman with a baby slumped against her shoulder. She looked young, but she seemed to have lost the carefree nature of her youth.

"Well, what's your name and how old are you?" Jolene asked the little boy who lay listlessly on the examination table. His eyes seemed glassy, and he didn't seem to mind the gash that split his eyebrow.

"He's Chris. He's two," responded the mother.

"Is he always this quiet?" Jolene asked.

"Oh, no! He's never like this. He's usually into everything and running all over the place," answered Tiffany, the fatigue evident in her voice.

"Well," replied Jolene briskly, "that's to be expected with two year olds."

"I guess, but he sure wears me out. He's real stubborn and he has temper tantrums all the time," Tiffany responded. "Sometimes, I just don't know what to do with him."

"How long has he been like this?" asked Jolene in her calm clinical voice.

"Oh, not long, he . . . uh . . . tried to climb out of his crib and **hit his head**[1] on the corner of the dresser." Tiffany's voice cracked as she looked at her son.

"I see," responded Jolene softly. "Then what happened?"

"Well, he got blood all over everywhere."

"Did he pass out?" asked Jolene, trying to keep her questions nonconfrontational.

"No, but he did seem kind of out of it," recalled Tiffany. "Oh, and he threw up a couple of times."

1 Although adolescents are the group most likely to be affected by a traumatic brain injury, significant numbers of infants, toddlers, and preschool children are also affected by brain injuries. Like Chris, **physical abuse** is often suspected as the cause of injury. However, accidental dropping, falls, and vehicular accidents also can cause an injury to a youngster's brain (Mira & Tyler, 1991).

"Well, Tiffany, judging from his behavior and some of the physical signs, there's a possibility of a concussion here," said Jolene as she quickly assessed Chris' injuries. "But we won't know for sure until we do some more tests."

"Using the **Children's Coma Scale**[2], I'd give him a CCS of 14. That would be a mild head injury," she said to the nurse at her side. "However, we know that young children can experience a more serious injury without any clinical signs, such as loss of consciousness."

"I'd like to keep him overnight for observation." Jolene told Tiffany, who now appeared apprehensive.

"Let's stitch up this fella. You can sit right here beside him," she continued. "After we're done, I'll have someone take you to the Admitting Office where you can get the paperwork done. Then you can come back and say goodnight and help us get him settled."

As the ward clerk escorted Tiffany to the front desk, Jolene again turned to the nurse.

"What do you think, Helen?" she asked.

"I'm afraid he's been here before, doctor," replied Helen, as she opened a chart for Jolene's perusal. "I think he's been a handful for that mom, and now she's got a new baby. Look at her, she's just a kid herself."

"What about the father?" Jolene asked.

"The insurance information says that he works for a trucking company, so he's away a lot," Helen answered as she looked over the chart. "Looks like this mom could use a little help."

"Poor kids, all three of them—Chris, Tiffany, and the baby," said Jolene. "Guess I'd better make that call to Family Services."

Jolene Scott, M.D.: *"Some situations really tear at your heart. The mom was so young and so alone. She had no resources financially, physically, or mentally to care for these children. It would have been easier to call this suspected abuse if she had been nasty or aggressive, but she just seemed worn out."*

"I guess the social worker met with her. I was a bit upset to learn that Chris went home with his mother after I ***released him***[3] *the next day."*

2

Jolene used a **Children's Coma Scale** (CCS) in order to assess Chris' condition. A CCS of 14 would be considered a mild head injury. With a mild brain injury there is a brief or no loss of consciousness at the time of injury. Vomiting, lethargy, dizziness, or lack of recall are seen at the time of the injury.

3

Experts often refer to mild TBI as "out of sight but not out of mind." About 290,000 people are admitted to hospitals annually with **a mild head injury**, although many others are believed to suffer mild head injury and not seek medical attention. These injuries have the potential for long-term problems. Until this potential is understood by medical and educational personnel, these problems may never be traced to their source. As a result, many of the behavioral and physical sequelae are treated without taking into account the unique nature of TBI (Mira, Tucker & Tyler, 1992).

Over the next year, Chris cried uncontrollably. He was also more impulsive than other toddlers and seemed to have no knowledge of danger

During this time Chris' parents separated. Seeing that Tiffany was unable to take care of her children and to make a better life for herself, the caseworker urged her to place the children in foster care.

Tiffany: *"I love my kids. It just got to be too much. Bob, my husband, was always gone. Even when he was home, he was either drinking or out with his buddies. When I asked for help with the kids he would get nasty, and I didn't need any of that.*

Chris needed to be watched all the time. He would run out into the street and try to get out of the car before it stopped. You name it, he would try it. No matter how much I tried to make him mind, he never seemed to get it.

He cried about everything, and when I didn't let him have his way, he would have a tantrum. So I would give in, just to keep him quiet.

I didn't want to give them up. But I wanted to finish my GED and with the divorce I had to get a job. My caseworker told me that it was for the best and that I could get my kids back when I was in better shape."

Chris and his younger brother were placed in a foster home. Chris was enrolled in a preschool. He tantrumed every day. Chris also became physically aggressive towards his classmates. As a result, he spent much of his day in a time-out area. Chris' foster family was unable to cope with his **behavior**[4] at home. Any kind of reward system did not seem to motivate him. He seemed unable to pay attention to anything for very long and was very easily provoked by the other children in the family. Due to these concerns, Chris' foster placement was changed.

Chris' first foster father: *"Now don't get me wrong, we didn't want to split the boys up. But every day me or my wife would have to go to the school to either get Chris or sit with him. It was hard on our other kids. We tried stickers and charts, you know, stuff that we used with our own kids and other foster kids, but nothing worked. I was getting worried that he'd really hurt somebody at preschool or at home. I hate to admit it, but we just couldn't handle that little guy."*

When he became old enough for kindergarten, Chris was already in his third foster home. His behavior had become a safety concern. His **impulsiveness**[5] and outbursts were so severe that his teacher initiated a behavior support plan. She also worked with his foster mother to follow up at home when his behavior became disruptive.

4

Problem **behavior** after an injury to the brain may result from the following (Arsarnow et al., 1991):

A. The behavior existed before the injury.

B. The behavior existed before the injury, but was made worse by the injury.

C. The behavior is a direct result of the injury.

D. The behavior is an immediate, but indirect, effect of the injury.

E. The behavior is a delayed effect of the injury.

5

Impulsivity is a common consequence of TBI, especially during the early phase of recovery. It is a direct result of injury to the brain and disrupts the ability of the individual to self-monitor and regulate. Impulsivity is most likely to occur when the student must deal with unstructured times or is emotionally distraught. Fatigue, confusion about expectations, or feeling overwhelmed by the environment or task also increases the likelihood of impulsive behavior.

Chris' kindergarten teacher: *"Every year, it seems, I get a youngster who comes from such a chaotic background that I just don't know where to start. Academics become secondary to teaching these children social behavior skills.*

The foster mom was really cooperative. We set up a behavior support program where I sent a note home everyday. If Chris took home a note stating that he had a successful day, he got to choose from a menu of privileges. If he took home a note about inappropriate behavior, she would curtail his television privileges or send him to bed earlier that night.

This seemed to work pretty well. But I still thought this child needed more help. I was glad when the foster mother took him to the doctor."

Upon the urging of the kindergarten teacher, Chris was taken to a doctor, who diagnosed Attention Deficit Hyperactivity Disorder (ADHD) and prescribed **medication**[6]. Chris was somewhat more manageable when he was taking medication. But he began to have difficulty sleeping at night. His behavior became even more difficult when the time between dosages had elapsed.

At age six, Chris changed foster homes and moved to another school district. His aggressive behavior seemed to subside. He was still highly distractible and did not like to follow directions. His teacher utilized a behavior management plan with inconsistent results. He was academically delayed and a decision was made to retain him at the end of second grade. Chris was taken to yet another doctor, who changed his medication. However, Chris seemed easily confused on this new medication and had more difficulty following directions and paid even less attention to **instruction**[7].

Chris: *"I keep having this dream. I open a door and there's my mom. I tell her that I've been good and I want to go home with her, but she goes away. I try to go after her, but I end up lost.*

I'm always kind of lost. I try really hard to be good in school, but I just can't do it."

At the beginning of his third grade year, Chris' aggressive behavior became a problem again. He was placed in a specialized foster home and started yet another school year in a new school.

6

Chris' doctor prescribed a psychostimulant for attention deficit and hyperactivity. Some side effects from this group of drugs include anorexia, insomnia, headaches, irritability, and behavioral "rebound" (an increase in hyperactive behaviors after the medications lose their effectiveness) (Kehle, Clark & Jenson, 1996).

7

Children who are **injured during the pre-school years** may recover motor and speech skills and appear to develop and function normally in subsequent years. However, when higher order skills and functions are needed later in school, these children will often develop academic problems. The child may have an average IQ but may still have significant academic difficulties. A neuropsychological evaluation can be helpful in determining the nature of the child's cognitive strengths and concerns (Clark, 1996).

Ms. Murphy and Mr. Wolcott: *"I figured something was up when my principal, Pat, called me into her office," said Ron Wolcott, a third grade teacher.*

"She told me that Maddie had taken on a new kid. Maddie is a foster mom who is, well, kind of like Wonder Woman. Family Services places children with her who haven't been successful anywhere else."

"At the time, we didn't have all of the records. But I knew that the boy was a third grader with a history of abuse and acting-out behavior. He had been in several foster homes and schools. Pat wanted to place him in my third grade classroom."

"Ron is a big guy. He looks gruff, but he's really a teddy bear. I thought that it would be a good placement because he runs a pretty structured classroom with a lot of positive reinforcement," Pat Murphy commented.

"We decided to get our ducks in a row, so to speak," she continued, "and set up a student support plan. Chris had a long history of noncompliance and ***aggressive behavior***[8]*. He also had been placed on behavior plans before. We didn't want to punish; we wanted to re-educate and change the environment to help Chris take charge of his behavior.*

We decided that the best way to go about this would be to observe Chris and collect information as to what incidences in and out of the classroom seemed to trigger his problematic behavior. Ron had kept anecdotal records on other students. After a week we would look over the information and determine how best to intervene in order to help Chris utilize appropriate behavior."

Mr. Wolcott added, "I would rather be proactive than just react and try things from the seat of my pants."

"That night I called Maddie and explained our plan. She and I have been down this road before with other kids. Then she put Chris on the phone. I told him that I was going to be his teacher and if Maddie would bring him to school a little early in the morning, that I would meet him in the lobby and 'show him the ropes'."

"He sounded so timid on the phone, just like a scared little boy."

Mr. Wolcott met Chris and his foster mother in the lobby before school. Mr. Wolcott took Chris on a tour of the school ending up in his new classroom. When the rest of the class arrived, Chris was seated with his head down on his desk.

Chris: *"I really liked this new teacher. I wanted to be good. But things bug me sometimes, and I can't listen or think, and I do bad things."*

8

Aggression is one of the most disruptive behavioral responses in any setting. Approaches to aggression will vary by the age of the student and the degree of aggressiveness. Pollock, Fue, & Goldstein (1995) provide the following recommendations for management approaches:

- Aggression is usually not purposeful. Often it results from fatigue or frustration, of which the student may not be aware. Help the student understand what is causing these feelings and then help him/her to manage these feelings.
- After an outburst, redirect the student away from the source of frustration. Don't dwell on the outburst.
- Take the student to the gym or some other safe place to "work it off."
- Speak very calmly to the student who has become aggressive.
- If the student's aggressiveness has escalated and cannot be controlled or threatens the safety of others, use your school's emergency procedures. Try to teach replacement behaviors instead of punishing the outburst.

All went fairly well for about two weeks. Chris would have an occasional temper display, but would calm himself with little intervention. However, things began to unravel as Chris began to have major episodes of problematic behavior. Usually, these episodes would take place in more loosely structured classes such as Physical Education or Art. The playground and lunchroom were also difficult.

After conferring with Ms. Murphy, Mr. Wolcott decided to seek assistance from the **Child Study Team (CST)**[9].

Mr. Wolcott: *"Pat makes it very clear that 'we're all in this together' and that nobody has to go it alone with some of the tough kids we get.*

So I had no hesitation about seeking help from the CST. They're all our kids, no matter in which classroom their desk is located.

The truth was, the honeymoon was over. I did think most of Chris' behavior was deliberate. I did think he was looking for attention and was trying to gain some sort of control over situations in which he felt uncomfortable and insecure. But he was going about it in all the wrong ways."

Working with Mr. Wolcott, the team identified Chris' positive behaviors, his minor behavior disruptions, and major incidences of misbehavior. Mr. Wolcott began collecting data in order to conduct a **functional assessment**[10] of Chris' behaviors. Also, his anecdotal records would record incidences of misbehavior and the effects of the agreed-upon interventions. These interventions included increased positive feedback in the classroom, working with the art teacher, special recognition for homework completion, and tutoring kindergarten students before school (see Addendum I).

At the next meeting, the team was pleased to hear that Chris' classroom behavior had improved. The teacher's data collection demonstrated that the incidences of misbehavior had decreased. Chris enjoyed the increased attention he was receiving from the school staff, and his tutoring time with the younger kids was productive for everyone involved.

However, Chris was still having difficulty in **social situations**[11]. He appeared to lack knowledge of social skills. He did not know how to manage conflict. As a result, he tended to be argumentative and sarcastic with both staff and other students. It was agreed that a meeting between Chris' teacher, the principal, the art teacher, and the counselor should be scheduled. Chris' foster parents would be invited and the possibility of more home involvement would be discussed (see Addendum II).

Mr. Wolcott had also become more concerned with Chris' academic performance. With behavioral issues becoming less

9

Child Study Team (Sprick, Sprick & Garrison, 1993): These teams are known by a variety of names in various school districts: Prereferral Team, Care Teams, or Teacher/Student Support Teams. These collaborative problem-solving teams consist of various staff members. Their job is to help teachers develop and implement intervention strategies to improve the academic and behavioral performance of a particular student.

10

Functional Behavioral Assessment (FBA) analyzes a behavior to determine what purpose it serves the student. The information-gathering part of a functional behavioral assessment is known as ABC analysis. The A refers to the antecedent events preceding the behavior, the B refers to the behavior itself, and the C refers to the consequences or "payoff" of the behavior.

11

Social/Behavioral Strategies (Pollock et al., 1995):

1. Provide the student with social skills training and practice.
2. Set clearly defined limits. Design clear and consistent rules. Teach behavioral strategies and classroom expectations.
3. Fill the behavior void. In addition to asking the student to stop a particular behavior, teach an acceptable replacement behavior.
4. Give frequent and consistent positive reinforcement of progress towards behavior goals.
5. Encourage the withdrawn child to participate with small, structured groups.
6. Redirect the frustrated student with another task.
7. Avoid giving attention or drawing the class's attention to inappropriate behavior.
8. Be sensitive to mood swings and behavior changes.
9. Prepare the student for any change in routine.
10. Use the same heading for all assignments.

pronounced, he felt that Chris was behind his classmates academically, particularly in the area of reading fluency and comprehension.

When Chris' foster mother arrived at the meeting the next day, she made the team aware of his history of head trauma, which had recently been brought to her attention during a doctor's visit. The other participants at the meeting became concerned and felt that an educational evaluation might be necessary. A screening meeting was scheduled with the multidisciplinary team, members of CST, and Chris' foster parents.

Maddie, foster mother: *"When I finally read Chris' records, I was surprised. Then I became angry. Why hadn't anyone taken this head injury into account before? Not that it explained everything. But here was a child who had suffered emotional and physical abuse. He had been medicated and managed. He had no stability or structure in his life. Yet nobody thought that this head injury he suffered at the age of two was important.*

I wondered how many other difficult children had experienced a brain injury and nobody knew about it."

The screening meeting was held the next week. The multidisciplinary team felt that Chris' medical history supported a traumatic brain injury. However, they could not ascertain the educational impact of this injury, nor if the injury was responsible for his ongoing social and behavior problems. Therefore the team proceeded with alternative intervention strategies (AIS). The team problem-solved to develop a hypothesis for the function of Chris' behavior (see Addendum III).

Ms. Murphy: *"It would be too easy just to blame everything in this youngster's life on the head injury and place him in special education. His frequent uprooting from foster home to foster home and from school district to school district also contributed to his behavioral and academic problems. The truth of the matter was, traumatic brain injury or not, the interventions were improving Chris' behavior and his academics."*

The success of the previous interventions was encouraging and the team built upon those strategies in the design of the AIS. The previous behavioral interventions were left in place. In addition, the multidisciplinary team felt that Chris would benefit from social skills and self-management lessons (see Addendum III).

At the end of the six weeks, all personnel involved with Chris met in order to determine if he was able to remain in the general education classroom with the modifications and strategies attempted or if the multidisciplinary team should proceed with an evaluation plan.

Mr. Wolcott: *"I don't think Chris believed he was doing so well. I remember the first time he shared a book report with the class. The book was about dirt bikes. He was so proud to show off that he had actually read a 'real' book. He answered all of the class's questions and ended up reading a part of it aloud to the class.*

He began to walk with his head up instead of watching his feet. He began to smile. I remember the day he laughed aloud. . . March 22, it was . . . I even wrote it down in my journal."

Chris' **behavior had improved**[12]. He utilized the strategies he had been taught for controlling his anger and was no longer aggressive or sarcastic towards his peers. He complied for the most part with his teachers' requests and had not been sent to the office for the past month.

Chris: *"This was my best time at school ever. I was getting smarter. I think everybody liked me. I liked Mr. Wolcott and even the principal was my friend. I started to get invited to birthday parties and kids would come by Maddie's to ask if I could play basketball or ride bikes. It was cool to have friends."*

Chris' reading comprehension skills had improved. With this information, it was determined that Chris was not demonstrating the need for an educational evaluation.

Due to Chris' chaotic past and the history of a possible TBI, the CST team decided to monitor and document any changes in Chris' behavior and academic performance. A Section 504 plan was designed in order to ensure that the interventions and adaptations would follow during his school career.

Ms. Murphy: *"I know we can't write the script for this child's future. I wish we could. He didn't start out with much and his life has been anything but easy. But we can honestly say that we did the best we could for him. My staff and I believe that as educators we not only educate young minds, but we salvage young hearts."*

12 Impaired impulse control, decreased attention, and poor self-monitoring are often present after a brain injury. These behaviors should be evaluated for age appropriateness and impact on learning.

Although the brain injury is a factor in these behaviors, there may be other influences, including pre-injury personality, maturity, family interactions, classroom characteristics, and peer influences. A child with a brain injury likely needs more time, structure, and direction to learn to behave and interact in ways that promote learning and foster good relationships. It is not appropriate to excuse harmful behaviors because they may be partly related to the brain injury.

Addendum I

Functional Behavioral Assessment

Appropriate Behavior	Problematic Behavior Incidents
☞ Enjoys art class, participates and is usually well behaved during class	☞ Argues
☞ Completes homework	☞ Does not pay attention to oral or written directions
☞ Attends school regularly	☞ Makes derogatory and sarcastic comments about staff and peers
☞ Maintains attention and completes favorite tasks	☞ Tears up papers when frustrated
☞ Accepts positive feedback	☞ Laughs inappropriately
☞ Enjoys sports	☞ Bothers other students
☞ Works well with younger children	☞ Swears aloud when upset or frustrated
	☞ Calls teacher and peers obscene names
	☞ Defies teacher
	☞ Hits other students
	☞ Throws books, chairs, etc.
	☞ Tries to run away

Reviewing Mr. Wolcott's anecdotal records, the team found that Chris responded to directions and requests from teachers and other staff by arguing, refusing to follow the directions, or making derogatory or sarcastic responses. When playing a game or participating in sports activities, Chris had difficulty when other students reminded him about the rules or when he had to wait his turn in line. Chris also seemed to have more difficulty in classroom settings such as in art, science, music and physical education. Transitional times before and after lunch and recess were also problematic.

The team developed the following tentative assumptions:

- ❖ The teachers' directions might confuse Chris,
- ❖ Chris was struggling with his academics,
- ❖ Chris might feel that his classmates were scolding him when they attempted to help him, and
- ❖ Chris could not manage his behavior in unstructured and less structured settings.

The team suggested ways to restructure stimulus events in order to avoid behavior incidents. Consistent consequences were also suggested to help redirect Chris' problematic behaviors.

Management Plan

Antecedent	Behavior	Proactive Consequence
• When given directions by teachers or staff.	• Argues	• Feedback: information about appropriate behavior.
	• Does not follow directions	• Break task down into smaller steps
	• Sarcastic comments	• Ignore
	• Calls teacher and peers obscene names	• Feedback: information about appropriate behavior.
	• Defies teacher	• Feedback: information about appropriate behavior.
• When faced with work or worksheets which are difficult	• Disgusting noises	• Model more appropriate behavior
	• Tears up papers	• Redo own paper or repair other's paper
	• Swears aloud when upset or frustrated	• Try to schedule "success" activity before a demanding task
• During "quiet worktime"	• Laughs inappropriately	• Feedback: information about appropriate behavior
	• Bothers other students	• Ignore
• Recess • Unstructured classtime, transition between class • When task is perceived as too difficult	• Hits other students • Throws books, chairs, etc.	• Early intervention, suspended to office for remainder of day. Structured recess, restitution
	• Tries to run away	• Early intervention, in-class time-out, structured recess, writing a plan to improve behavior

The team generated a list of ways to encourage Chris's positive behaviors. Members of the team agreed to work with Chris to reinforce these behaviors.

The following interventions were implemented to increase the structure and supervision available to Chris. His workload was adjusted. The team also provided new opportunities for him to succeed and receive praise, while altering the nature of his peer relations.

Encourage interest in art: Mr. Bryce, the art teacher, agreed to have Chris come to his room once a week to help display finished artwork from classes. He also agreed to have lunch with Chris once a week, contingent upon Chris not having any major incidences. Mr. Bryce explored various art project options with Chris, who expressed a special interest in ceramics.

Participation in sports: Mrs. Frank, the physical education teacher, agreed to look into some community and school sports programs which might be available for Chris. She planned more structured games and tasks for the PE class, integrating Chris and minimizing unstructured times.

Tutoring for other students: Ms. Cole, the kindergarten teacher, decided that Chris could help tutor some of her students during the morning, before class began.

Special recognition for homework completion: Mr. Wolcott agreed to set up a homework completion program that would be used classwide. The number and complexity of Chris' assignments were carefully monitored. Mr. Wolcott spent time with Chris to ensure that he understood the assignments.

Increased positive reinforcement: Mr. Wolcott agreed to work on increasing his positive comments to Chris when he used appropriate behavior. Chris' foster family similarly rewarded his efforts to use more appropriate responses.

The team hypothesized that some of Chris' behavior functioned to gain attention from his classmates and Mr. Wolcott. While Chris was tutoring the kindergarten students in the morning, Ms. Murphy, the principal, would teach Chris' class how to ignore those behaviors. Ms. Murphy also worked with the class to reinforce Chris for positive classroom behavior. The team also thought that Chris may not realize he was misbehaving and that specific feedback should be given in a calm, quick, and private manner. Consequences were designed that fit the infractions. If Chris ripped up his paper, he would have to redo it. If he ripped up someone else's paper, he would have to repair the paper and write an apology. The repaired paper would be accepted by Mr. Wolcott.

The team also set up a plan to deal with Chris' episodic severe behavior incidents and how his teacher should respond to him during this time. A study carrel was positioned in the corner of the principal's inner office. This was designated as Chris' office—a quiet place where he could get away from the classroom and compose himself. Ms. Murphy agreed to supervise Chris and help him transition back into the classroom by briefly discussing the inappropriate behavior and using modeling and role play to practice the appropriate behavior. If Chris became aggressive, he would go to his office, working on assignments provided by Mr. Wolcott for the remainder of the day.

The plan was put into effect after a meeting between Chris, his foster mother, Mr. Wolcott, and Ms. Murphy to make sure that everyone understood the terms of the plan and the positive and negative consequences involved.

Addendum II

Behavior Management and Problem Solving

In evaluating a behavior concern and attempting to make changes, a number of variables must be considered. These include environmental, student, peer, and family variables. These variables need to be taken into consideration in order to evaluate what is likely to trigger behavior, how a behavior is maintained, the possible benefit of maintaining a behavior, and what areas need attention.

The goal of problem solving is to enhance the student's success in the classroom. For major problem behaviors, this will mean attempting to eliminate or greatly reduce the behavior. However, with other behavior areas, the goal may be to modify, decrease, or redirect behaviors. In all cases, it is often an equally critical goal to replace an ineffective behavior with an alternate action that will bring the student more positive rewards toward goals of learning and social integration.

Environment Variables

Task Demands: Complexity, Pace, and Learning Modalities

- Is the student overwhelmed with the difficulty level of the workload or particular task relative to the student's cognitive level?

  A student with TBI may have varied skills and limitations that change over time. In addition, the student may have basic skills but have more difficulty integrating the skills as the task becomes more complex. Tasks that require multiple steps for completion or tasks that rely upon generalization of previously learned skills are examples of more complex skills.

- How much time is needed for the student to finish the task? How much time is allowed?

  Mental processing speed is often affected by TBI, and the student is likely to require slower-paced learning. This is more obvious early in recovery and may influence some areas more than others.

- What is the modality of learning and responding?

  A student with fine motor deficits may be highly resistant and disruptive when given writing tasks, but more open to providing oral responses or tasks with minimal writing demands.

Room Stimulation: Is the room overstimulating in some manner?

- **Noise:** Chatter of classmates, public address announcements, hall noise, outside noise

  A student with TBI often struggles to ignore extraneous noises.

- **Visual:** Posters, room color, amount of room furnishings, full chalkboards, lighting

  A student with visual difficulties often has difficulty ignoring unnecessary visual information and needs a great deal of effort to use his or her current vision.

- **Activity:** Movement in the classroom, hall, and cafeteria, the number of transitions between one activity and another, playground, and physical education

  All students with TBI are prone to fatigue. Children with physical limitations may have particular difficulty when asked to move a great deal.

- **Structure:** Predictability of the day, degree of regulation of tasks, activity and student behavior in the classroom, amount of free undirected time, amount of time without supervision

  During unstructured class and playtime, a student with TBI is more prone to be impulsive, agitated, and suggestible to peers. Also, in the classroom, a high degree of structure and predictability greatly helps the student to know and follow behavioral and academic expectations.

- **Supervision:** Amount of time a student is expected to work independently or with peers, degree of adult help available if needed, student's perception of teacher availability

  The student may lack the insight on the need for help and consequently may profit from greater monitoring and help initiated by the teacher or helper. When asked to work with peers, the student may be overwhelmed with the task of working, avoiding socializing too much, keeping up with the pace of peers, and contributing in a positive manner.

Student Variables

- **Endurance:** The student with TBI is more prone to mental and physical fatigue early in the school day. This will affect his/her attention, memory, and impulse control.

- **Coping Skills:** After an injury, a student's coping skills may be more easily taxed. Sometimes the student may have lost a primary coping avenue; for example, a teen who runs for exercise and emotional outlet may be unable to utilize this avenue after an injury.

- **Adjustment:** A TBI brings many changes to a student's life. Depression may interfere with the ability to be successful in school and with friends.

- **Self-perception:** The student may struggle in integrating past interests and self-assessment with the current and changing self.

- **Peer-perception:** The student may have misperceptions about how peers see him or her. They may misperceive peer reactions to behaviors as well.

- **Goals and interests:** How the student perceives school still influences investment in school, goals, and interests.

Peers

- Are peers encouraging negative behaviors?
- Is the student attempting to get attention in a negative manner?
- Is the student attempting to mimic a behavior of another student but in a way that fails to get the same response?

Family

- What is the family's perception of the behavior?
- What is the family's commitment to working with the school to develop a unified approach?
- Is the behavior consistent with how the family responds to key situations such as stress or conflict?

Any of the above factors found present, and possibly influencing the elicitation and maintenance of the behavior, should be addressed in a program plan. Two additional recommendations are:

1. Working as a team in the assessment of the variables. Consider bringing in professionals familiar with pediatric brain injury and school reintegration.
2. Including the student, especially an adolescent, in developing goals, alternative behaviors, and reinforcement.

Finally, remember that working to prevent behavior outbursts is likely to provide much greater positive outcomes than only setting up a system to change the consequences of a less desired behavior.

Addendum III

Alternate Intervention Strategies (AIS)

The success of the previous interventions was encouraging and the team built upon those strategies in the design of the alternative intervention strategies (AIS). The previous behavioral interventions were left in place. In addition, the multidisciplinary team felt that Chris would benefit from social skills and self-management lessons. The team felt that there were three areas of behavior that could be enhanced through direct instruction:

Concern	Goal	Instructional Emphasis
Arguing with staff/ students	Accepting feedback appropriately	Using appropriate social skill for accepting negative feedback: Eye Contact Saying OK Asking for clarification
Sarcasm and inappropriate language	Appropriate comments and exclamations	Silence or acceptable comments
Aggression	Calming self	Counting to ten, deep breathing, or self-imposed time-out

Mr. Weston, the guidance counselor, rearranged his lesson plans to include these skills during the regular guidance lesson. In addition, Mr. Wolcott, the general class teacher, agreed to work with Chris during the last five minutes of recess in order to practice the skills and to give him feedback as to how he was progressing.

Mr. Bryce, the art teacher, decided that part of his weekly lunch time with Chris could be devoted to practicing these skills. Mrs. Kim, the special educator who co-taught Chris' class during reading instruction, agreed to help determine Chris' reading proficiency. She would observe Chris during the class and collect work samples. A series of reading fluency probes would be administered during the six-week intervention to see if Chris was progressing at a rate comparable to his classmates. She would also instruct Chris in strategies for improving reading comprehension and see if the instruction would improve his comprehension of material he had read.

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Appendix A

Resource Agencies

Brain Injury Association
(formerly the National Head Injury Foundation)
105 N. Alfred St.
Alexandria, VA 22314
(703) 236-6000
(703) 236-6001 (FAX)
Internet: www.biausa.org

The Brain Injury Association advocates for survivors of brain injury and their families. They publish a magazine, TBI Challenge, with topical articles and have a catalogue of free and/or inexpensive educational publications on the effects of brain injury. There are affiliates of the Brain Injury Association throughout the United States (see Brain Injury Association of Missouri, below).

Brain Injury Association of Missouri
10270 Page Ave., Suite 100
St. Louis, MO 63132-1322
1-800-377-6442 (MO only) or (314) 426-4024
(314) 426-3290 (FAX)

The Brain Injury Association of Missouri is an affiliate of the Brain Injury Association and provides information to survivors and their families on the effects of head injury. They provide support for survivors and their families and friends through local chapters located throughout the state of Missouri. Each summer they sponsor Camp Wilderness, a summer camp for persons with brain injury. The Association also publishes an informative newsletter, *Missouri Focus*, detailing the status of Missouri law related to head injury and information from each of the chapters throughout the state.

Bureau of Special Health Care Needs
P.O. Box 570
Jefferson City, MO 65102
1-800-877-6246 or (573) 751-6246

This agency provides preventive, diagnostic, and treatment services to children under age 21. Services available are dependent upon financial and medical eligibility and may include medical care and hospitalization costs, medical equipment, supplies, therapies, and service coordination. This agency is within the Department of Health, Division of Maternal, Child, and Family Health.

Division of Family Services
P.O. Box 88
Jefferson City, MO 65102
(573) 751-3221

Each county in the state has a Family Services office. Programs offered include: a) Financial Assistance—Medical Assistance, General Relief, Food Stamps, Emergency Assistance, ADC; and b) Social Services—Protective Services, Foster Care, Adoption, Emergency Placement of children in immediate danger of abuse or neglect, Crisis Intervention.

Division of Vocational Rehabilitation
Missouri Central Office
2401 East McCarty Street
Jefferson City, MO 65101
(573) 751-3251

Vocational Rehabilitation is a program designed to help persons with physical or mental disabilities become employable. A vocational rehabilitation counselor has been assigned in each district to work with clients with head injury. Many services are provided; some are free and others are assessed by the ability to pay. Several Vocational Rehabilitation programs provide financial assistance, including job training and placement.

Head Injury Service Coordination Program
P.O. Box 570
Jefferson City, MO 65102-0570
1-800-451-0669

The Missouri Department of Health through the Head Injury Services Program provides assistance in locating, coordinating, and purchasing rehabilitation and psychological services for individuals who have survived a traumatic brain injury. Individuals may contact a service coordinator or may be referred, with their permission, by physicians, family, friends, rehabilitation centers, and support organizations. The program is available free of charge, regardless of the insurance or financial status of the individual with traumatic brain injury.

Longview Community College
Project ABLE
500 S.W. Longview Road
Lee's Summit, MO 64081-2105
(816) 763-7777

Longview Community College provides a transitional program for students with head injury called Project ABLE. The program offers specialized courses and counseling to teach skills needed to be successful, independent learners. Project ABLE consists of a structured curriculum including guidance courses to develop social, self-advocacy, and career planning skills; study skills courses paired with regular college courses; and basic academic skills courses.

Missouri Head Injury Advisory Council
Office of Administration
Division of General Services
P.O. Box 809
Jefferson City, MO 65102-0809
(573) 751-9003
Internet: www.oa.state.mo.us/gs/hi/index.htm

The Missouri Head Injury Advisory Council was established in 1985 to address the unique needs and problems presented by persons with head injury in the state. The Council meets bi-monthly to make recommendations with regard to prevention, emergency medical services, rehabilitation, long term care, and community support services. Among other activities, the council publishes an annual report and a state plan for developing a continuum of services, publishes a newsletter, and sponsors an annual statewide conference.

Project First Steps
Early Childhood Special Education
Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, MO 65102
(573) 751-0187

A cooperative effort of the Missouri departments of Elementary and Secondary Education, Health, Mental Health and Social Services. This program offers services to children ages birth to three who exhibit a significant delay in development in one of the following areas: cognitive, speech/language, self help, physical, or psychosocial. Services include: service coordination, medical services for evaluation, therapies, transportation, nursing services, and psychological services.

Regional Centers for the Developmentally Disabled
Division of Mental Retardation and Developmental Disabilities
1706 E. Elm
P.O. Box 687
Jefferson City, MO 65102
(573) 751-4054

This division of the Department of Mental Health provides a variety of services through 11 regional centers. Individuals who have a developmental disability or experienced trauma that caused a functional disability before age 22 are eligible. Services might include case management, counseling, respite, housing, habilitation, and day programs.

Social Security Administration
Missouri Office
3702 West Truman Blvd.
Jefferson City, MO 65109
(573) 751-6246
1-800-772-1213

The Social Security Administration serves millions of disabled Americans through monthly Social Security Disability Income (SSDI) or Supplemental Security Income (SSI) payments. Some receive both. Many also have help from Medicare or Medicaid in paying medical bills. One of the Social Security Administration's highest priorities is to help beneficiaries with disabilities achieve a better and more independent lifestyle by helping them take advantage of employment opportunities through their "work incentives" program.

Appendix B

Resource Materials

Resource Centers

Center for Innovations in Special Education
Parkade Center, Suite 152
601 Business Loop 70 West
Columbia, MO 65211
1-800-976-2473 (MO only) or (573) 884-7275
Relay MO: 1-800-735-2966 (TTY)
Internet: www.coe.missouri.edu/~mocise

The Center for Innovations in Special Education (CISE) is a cooperative effort of the Missouri Department of Elementary and Secondary Education's Division of Special Education and the University of Missouri-Columbia's College of Education, Department of Special Education. CISE offers a range of services, including written materials, conferences, workshops, and resources for loan to assist educators in their professional growth and in the delivery of services. Loan resources include TBI and other related topics.

Missouri Technology Center for Special Education
University of Missouri-Kansas City
5100 Rockhill Road-ED 24
Kansas City 64110-2499
(816) 235-1040
(816) 235-5270 FAX
E-mail: techctr@umkc.edu

The mission of the Technology Center is to provide assistive technology information, training, and technical assistance to educators who provide instruction to individuals enrolled in special education who are unable to learn or communicate effectively without assistive technology.

Books for Educators

Educational Dimensions of Acquired Brain Injury
Savage, R.C., & Wolcott, G.F. (Eds.). (1994).
Hardcover—574 pages
PRO-ED, Inc. ISBN: 0890795983

This text is for teachers and parents by professionals who work with individuals who have survived a brain injury. It presents specific models and strategies for responding to the educational and lifelong needs of those with a brain injury. The five sections present the following dimensions of TBI: an overview, cognitive, psychosocial-behavioral, neuro-motor, and school and community.

Improving Pragmatic Skills in Persons with Head Injury
Sohlberg, M.M., Perlewitz, P.G., Johansen, A., Schultz, J., Johnson, L., & Hartry, A. (1992).
Paperback—158 pages
Communication Skill Builders. ISBN: 0884505456

This book provides techniques for remediating deficits in areas of initiating conversation, topic maintenance, turn taking, verbal organization and active listening. Training procedures cover increasing a student's awareness of a problem behavior, structuring situations to practice a skill until it becomes automatic, and providing opportunities for applying skills to real-life settings. The easy-to-use format contains reproducible record-keeping charts.

Pediatric Traumatic Brain Injury: Proactive Intervention
Blosser, J.L., & DePompei, R. (1994).
Paperback—266 pages
Singular Publishing Group, Inc. ISBN: 1565931688

This book was written for professionals from a variety of disciplines who are challenged daily by children and adolescents with traumatic brain injury. The authors explain their philosophy for planning and implementing practical programming for this group of youngsters. Their goal was to provide doable strategies for practicing clinicians. It was also their intent to promote families as integral members of intervention teams.

Traumatic Brain Injury and Special Education: An Information Resource Guide
Stevens, A.M. (1994).
Purdue University Department of Educational Studies.
ERIC: ED 377 613

An annotated list of 24 references on traumatic brain injury and special education gleaned from database searches. Entries include research reports/reviews, edited books, conference presentations, text books, and journal articles. Specific audiences who will find this resource guide useful include classroom teachers, special educators, school psychologists, speech/language specialists, physical therapists, administrators, and researchers.

Traumatic Brain Injury Rehabilitation
Ylvisaker, M. (Ed.) (1997).
Hardcover—479 pages
Butterworth-Heinemann. ISBN: 0750699728
This book represents collaborative effort among noted professional young people with TBI and their families. Topics include rehabilitative medical management, a nursing perspective on the recovery continuum, intervention for motor disorders, assistive technologies, cognitive rehabilitation, school reentry, career development, and support systems.

Books for Families

Confronting Traumatic Brain Injury: Devastation, Hope, and Healing
Winslade, W.J. (1998)
Hardcover—240 pages
Yale University Press. ISBN: 0300070268
This book explains traumatic brain injury, how it is caused, and what can be done to treat, cope with, and prevent traumatic brain injury. Winslade looks at the impact brain injury has upon the survivor and family. He acknowledges the challenges to society presented by survivors with traumatic brain injury who may never recover enough to lead independent lives.

Coping With Mild Traumatic Brain Injury
Stoler, D.R. & Hill, B.A (1998)
Paperback—284 pages
Avery Publishing Group. ISBN: 0895297914
Having gone through the experience of MTBI herself, psychologist Diane Roberts Stoler set out to provide help and information for other MTBI survivors, their families, and their friends. This book explains how the brain works and how it can be injured, the procedures used to diagnose brain injury, and the different treatments available. The most common physical, mental, and psychological symptoms of brain injury are explained.

Head Injury: The Facts: A Guide for Families and Care-Givers (Oxford Medical Publications)
Gronwall, D.M.A., Wrightson, P., & Waddell, P. (1998)
Paperback—208 pages
Oxford University Press. ISBN: 0192627139
A basic explanation of traumatic brain injury, the course of treatment, and what to expect as the survivor reenters life outside of the hospital or rehabilitation facility.

Over My Head: A Doctor's Own Story of Head Injury from the Inside Looking Out
Osborn, C.L. (1998)
Hardcover—256 pages
Andrews McMeel Publishing. ISBN: 0836254198
A personal account of one survivor's experiences, thoughts, feelings, and relationships as she slowly reestablishes her new identity.

Parenting a Child with Traumatic Brain Injury
Hughes, B.K. (1990).
Hardcover
Charles C. Thomas Pub., Ltd. ISBN: 0398056463
Stresses the importance of external support for families who have a child with a traumatic brain injury. Discusses methods for best outcomes for children in both rehabilitation programs and school situations.

Appendix C

Community Prevention Programs

One of the best ways to channel peoples' energy in relation to traumatic head injury is to support the activities of prevention programs. This not only increases others' awareness of the effects of brain injury but it also involves the members of a school and family in making positive steps toward the prevention of injury to other members of the community. For instance, the American Academy of Pediatrics reports that bicycle helmets can reduce the risk of serious brain injury by 85%, yet less than 2% of all children wear them. Missouri is fortunate to have in place a number of prevention programs.

Children's Trust Fund
The Children's Trust Fund, which is funded through donations, is the principal funding source for child abuse prevention programs.

Head Smart
The Brain Injury Association (formerly the National Head Injury Foundation), the American Academy of Pediatrics, and the Bicycle Federation of America joined forces to launch **Head Smart**, a national campaign to prevent head injuries through increased use of approved bicycle helmets. Material is available through the Brain Injury Association and the Missouri Head Injury Association.

THINK FIRST (Missouri Head and Spinal Cord Injury Prevention Project)
E-mail: thinkfirst@aans.org
The Missouri **THINK FIRST** program, University of Missouri-Columbia, conducts school assemblies addressing the need for exercising good judgment in order to avoid unnecessary injury. The Project assisted in the making of a nationally acclaimed, award winning film called *Harms Way*, featuring young adults from Missouri with head and spinal cord injuries. The University program receives financial assistance from the Missouri Department of Health, Missouri Division of Highway Safety, the Missouri Safety Belt Coalition, and other sources.

Appendix D

Internet Resources

World Wide Web Sites

AbleData
www.abledata.com/index.htm
This site puts assistive technology and disability-related resources at your fingertips. It includes related links, news, resources, classified ABLEDATA publications, and a searchable database. It is sponsored by the National Institute on Disability & Rehabilitation Research (NIDRR), U.S. Department of Education.

Behavioral Medicine Associates
www.webcom.com/bmainc/mtbi.html
This page is maintained by Behavioral Medicine Associates Inc. (BMA), Edina, Minnesota. It describes TBI symptoms and discusses treatment options.

Brain Injury Association, Inc.
www.biausa.org
This site provides rehabilitation information, phone numbers, and addresses of state rehabilitation offices. It is sponsored by the Brain Injury Association, Inc. in Alexandria, Virginia.

Center for Neuro Skills: TBI Resource Guide
www.neuroskills.com/~cns/
This site includes FAQs, personal stories, and free reprints of TBI research articles. It is sponsored by the Center for Neuro Skills with centers in Bakersfield, California and Irving, Texas.

Emory Center for Injury Control
www.sph.emory.edu/CIC/cichome.html
Emory Center for Injury Control is a collaboration of Emory's Schools of Public Health and Medicine. The Center is involved in research, community service, and education, with emphasis on prevention and control.

HEADS UP
www.hsc.missouri.edu/~thinkfirst/
Missouri HEADS UP is a statewide injury prevention program designed to educate the public, especially adolescents, about their vulnerability to brain and spinal cord injury, common causes of these injuries, and how to prevent them.

Injury Control Resource Information Network (ICIRN)
www.injurycontrol.com/icirn
ICIRN contains a huge list of internet-accessible resources broadly related to the field of injury research and control.

John & Clara's TBI/ABI Related Sites and Info
http://tbinet.org/jlyon/tbi.html
Designed to help those needing information on brain injuries, this site includes related links, support groups, on-line chats, articles, and related organizations. It is maintained by John & Clara Lyon, Woodhaven, Michigan.

Head Injury: Missouri Head Injury Guide for Survivors, Families, and Caregivers
www.tbimo.org/mhig/mhig1.htm
Produced by the Missouri Head Injury Association, this web site is designed to help people in the state of Missouri know the questions to ask and who to turn to for further information and assistance with regard to traumatic head injury.

Missouri Head Injury Advisory Council
www.oa.state.mo.us/gs/hi/index.htm
The Missouri Head Injury Advisory Council is appointed by the Governor to promote, study, review, and recommend policies to prevent traumatic head injuries and to restore independent and productive lifestyles after traumatic head injury.

Missouri Traumatic Brain Injury Demonstration Project
www.tbimo.org
TBI MO is working to improve the delivery of community-based services to people with traumatic brain injury and their families. Its main focus is strengthening relationships between hospitals, private rehabilitation service providers, and local school districts regarding supports for TBI.

Neuropsychology Central
www.premier.net/~cogito/neuropsy.html
Neuropsychology Central provides information on neuropsychological assessment and treatment, organizations, and neuropsychology. It is maintained by J.N. Browndyke, Ph.D. candidate at Louisiana State University, Baton Rouge, LA.

National Resource Center for Traumatic Brain Injury
http://neuro.pmr.vcu.edu

This site features educational materials, assessment tools, audiovisuals and intervention kits on the topic of TBI. It is sponsored by the National Resource Center for Traumatic Brain Injury located in the Medical College of Virginia at Virginia Commonwealth University, Richmond, Virginia.

Neuro-Support Group
www.geocities.com/HotSprings/Spa/4512/

Created by a member of a neuro-support group located in Northeast Pennsylvania, Neuro-Support provides life stories, poems, and words of wisdom from survivors.

Office of Special Education-Traumatic Brain Injury
http://curry.edschool.virginia.edu/go/cise/ose/categories/tbi.html

This site offers Special Education resources with a specific section for TBI information from the Curry School of Education at the University of Virginia.

The Pacer Center
www.pacer.org

This site is sponsored by "Parent Advocacy Coalition for Educational Rights," Minneapolis, Minnesota. Its mission is to improve and expand opportunities that enhance the quality of life for children and young adults with disabilities (i.e., physical, mental, emotional, learning).

The Perspectives Network: Survive with Pride
www.tbi.org

This site is sponsored by the Perspectives Network, a nonprofit organization in Cumming, Georgia founded by an individual with brain injury. Its focus is communication among persons with brain injury, family members, caregivers, friends of persons with brain injury, professionals who treat brain injury, and community members.

THINK FIRST
www.thinkfirst.org

THINK FIRST, the National Brain and Spinal Cord Injury Prevention Program (formerly titled The National Head and Spinal Cord Injury Prevention Program), is an award-winning public education effort targeting high-risk age groups.

Your TBI, ABI, and Epilepsy Home Away from Home
www.canddwilson.com/tbi/tbiepil.shtml

This site provides information on Traumatic Brain Injury (TBI), Acquired Brain Injury (ABI), and Epilepsy. It includes poems, writings, and web pages written by survivors. It also includes a list-serv. It is maintained by Debbie Wilson, a person with TBI in Montevallo, Alabama.